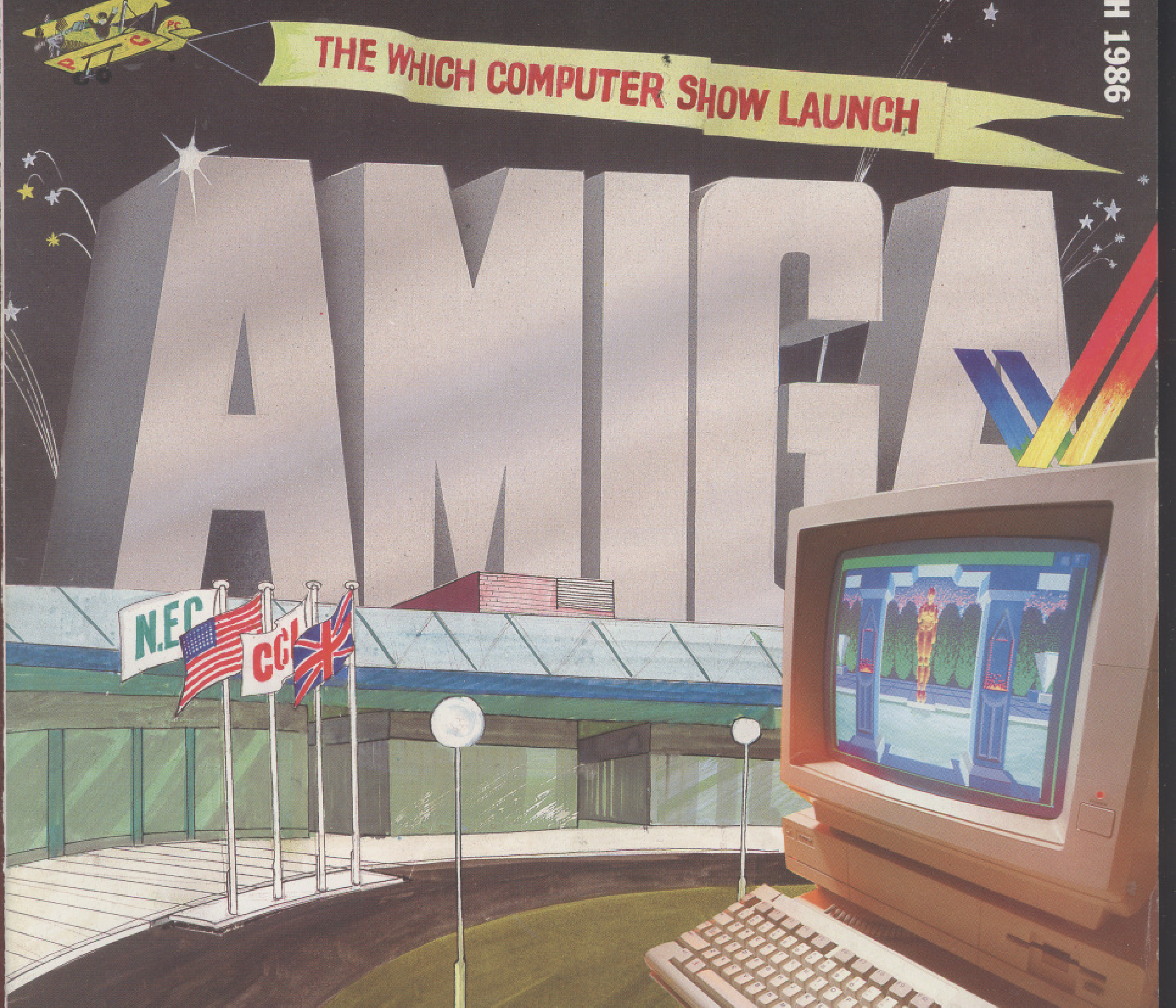
COMMODORE

BUSINESS MAGAZINE INCORPORATING AMIGA USER

MARCH 1986


PC
THE WHICH COMPUTER SHOW LAUNCH
AMIGA
N.EC
CC

INSIDE

Commodore colours the PC and reveals the secrets of its amazing Amiga . . . more of the best NLQ printers and word processors . . . *the PC* software list . . . graphics for business and much more . . .

YOU CAN WIN THE PENMAN PLOTTER AND A CITIZEN PRINTER!

Summagraphics®

Summagraphics is the world's leading supplier of digitizers. Since 1972 we've supplied more digitizers and data tablets to more OEM's than any other manufacturer. Now we're bringing the same professional technology to personal computer users.

SummaSketch™

Now you can add SummaSketch, a high resolution digitizing tablet,to your IBM PC or Compatible and convert your system into a personal CAD workstation.The SummaSketch tablet, measuring 12ins x 12ins with a resolution of 1000 lines per inch, enables you to realize the full potential and productivity of CAD and business graphics software by allowing you to scale and trace existing drawings as quickly and easily as putting pen to paper.

SummaSketch is ideal for engineers, architects, designers or users of business graphics. Software packages supporting SummaSketch include AutoCAD, VersaCAD, GEM Draw and GEM Paint. SummaSketch tablets come complete with stylus, power supply, interface cable and users' manual.

MacTablet™

Developed under Apple's Certified Developer's Program, the MacTablet hardware/software combination provides an ideal interface to the Apple Macintosh for the production of graphs, charts and drawings. Summagraphics' 6ins x 9ins MacTablet and stylus let you turn your Macintosh system into a real graphics workstation by adding the ability to trace and enter existing drawings as quickly and easily as putting pen to paper. Drawings can be traced from a single piece of paper or from originals up to ½in thick. MacTablet is compatible with MacDraw, MacPaint and all Macintosh software. It also operates in conjunction with the Macintosh Mouse, so there's no need to plug and unplug.

The software allows you to install the MacTablet driver in the desk accessory menu so you can use your MacTablet with all your Macintosh software.

SummaMouse™

SummaMouse combines speed, reliability and intelligence. Its fully electronic technology ensures that it is maintenance free. SummaMouse is ideal for moving between windows and interacting with CAD and business graphics software.It enables you to interact faster and more accurately with software than is possible through keyboard commands.

SummaMouse now operates with IBM's new operating environment, TopView. Just point and click to take full advantage of all the features of IBM's new windowing and multi-tasking software.

SummaSketch, MacTablet and SummaMouse, from the World's leading supplier of digitizers.

Now, draw your own conclusions

UK Sales and Service
Summagraphics Limited
3/4 Winchcombe Road
Newbury Berkshire RG14 5QY
0635 32257 Telex 848750 SUMMUK G

International Sales
Summagraphics Limited
140 Cromwell Road
London SW7 4HA
01-373 7238

Summagraphics®

To Summagraphics.
I would like further information on: ______________________

____

Name ______________________

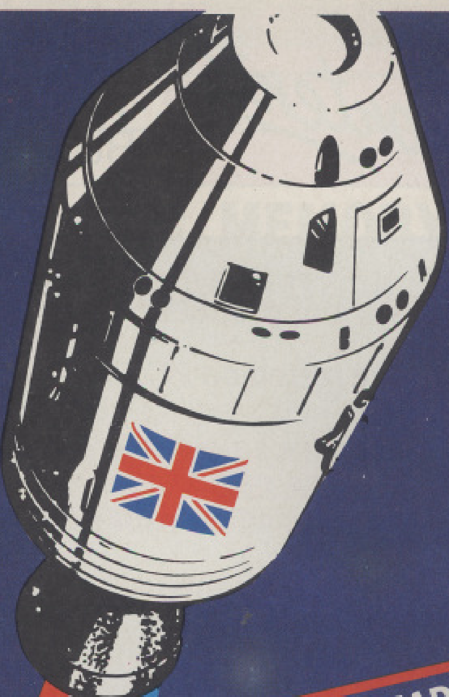
Company ______________________

Address ______________________

____

Telephone ______________________ CBM12

Samleco Launch

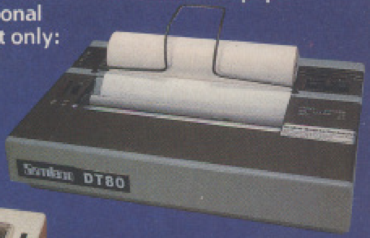


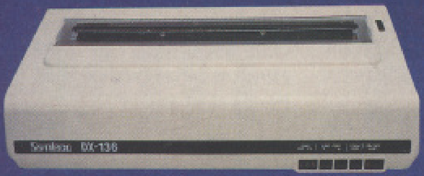
A BRITISH FIRST INTO THE AGE OF LOW COST PRINTERS

In only 6 months Samleco have created a sales boom in 5 countries including the U.K. and are rapidly becoming a force to be reckoned with.

WORLDWIDE LEADERS, BOOSTING PRINTER TECHNOLOGY TO UNBELIEVABLE ORBITS FROM BRITAIN!

DT-80 (Silent Printer)
35 cps, 80 col., 11 x 9 thermal printer. High definition. Built-in PSU. Full range of interfaces. Will take standard paper. Exceptional value at only: RRP **£139** excl. VAT





DX-136
Wide carriage, high definition, high speed and with 9 international languages and Near Letter Quality.
RRP only **£339** excl.VAT

DX-85
120 cps, 80 col., 9 x 9 dot matrix printer. Full graphics, operator interchangeable interfaces for Centronics Parallel, RS 232 Serial and Commodore and including 2K buffer.
RRP only **£189** excl. VAT

DX-86
Simply unbeatable high speed dot matrix printer. 9 international languages. Suits all computers including IBM PC, MSX, etc. and with Near Letter Quality.
RRP only **£229** excl. VAT

DX-135
Heavy duty, 120 cps, 132 col., 9 x 9 dot matrix printer with push-pull tractor for multi-part stationery.
RRP only **£299** excl.VAT

Someone had to do it!

ABOVE PRINTERS HAVE OPTION OF CONTINUOUS ROLL, FANFOLD AND SINGLE SHEET FEEDING.

Samleco Limited
9 Fairacres Ind. Est., Dedworth Road, Windsor, Berks SL4 4LE,
England. Tel: Windsor (0753) 854717 (3 lines). Telex: 838791

DISTRIBUTOR: MILLS ASSOCIATES LTD
Unit 6, Wilford Industrial Estate, Ruddington Lane, Wilford,
Nottingham NG11 7EP. Tel: Nottingham (0602) 818222

Contents

COMMODORE
BUSINESS MAGAZINE
March 1986

PC news and products 4
Software tested on PC 7
PC in glorious colour 9
Wordprocessing on your PC 14
Amiga developments 19
Amiga software 23
Printer trends and predictions 24
NLQ printers on test 29
PC compatible printers 30
Printer silencers 32

ADVERTISERS INDEX

Borsu International Limited	OBC
Citizen Computer Printers	26,27
Commodore Business Machines	10,11
Data Design Techniques	20
Data Distributors Limited	IBC
Dialog Software	33,34
Fernhill Equipment Sales	6
GDC Limited	8
LMF (UK) Limited	8
Micro Control Systems Limited	6
Micropro International Limited	16,17
Modehart Limited	13
Monarch Acoustics Limited	8
Primatel Products Limited	13
Proguard	15
Quiet Print Europe	18
Rockfort Products	28
Samleco Limited	3
Summa Graphics Limited	IBC
T-Mat Limited	8
Yorkshire Electronic Services Ltd	5

CONTRIBUTORS
Susan Pearce
Francis K Jago
BJ Lewis
Anthony Mael
Susan Curran
Research: Teresa Gonzalez
Consultant: BJ Lewis MSc FCA
Cover Illustration: Graham Baldock
Photography: Francis Jago

Typesetting.. Merton Graphics

Subscriptions rates: UK £15, Europe £20, Outside Europe – £28.50. For more information phone 01-800 5708 ext. 274, or write to the address below.

Produced by Commodore Computing International on behalf of Croftward Ltd
Finsbury Business Centre,
40 Bowling Green Lane,
London EC1R 0NE
Tel: 01-278 0333

Distributed by Comag, Tavistock Road, West Drayton, Middx. UB7 7QE
Printed by Chase Printers Group, London and St. Austell.

The problem of computer incompatibility appears to have been solved by InterMedia with a system based on a personal computer.

The company claims that its multi-media convertor can read disks from almost any computer, and then generate disks which may be read by almost any other computer.

One application is in printing, where text may be taken on a disk from a word processor and typeset very quickly.

Swedish banks were keen to use the multi-media convertor in order to accept payroll data and other financial dealings direct from the customers' computers.

Contact: InterMedia Graphics Systems Ltd. Tel: 0273 478725.

Also then on the subject of computer compatibility, Canadian company Keyword Office Technologies has developed Com-File.

The system converts a document into the Com-File format, transmits it and finally restores it to its original format at the other end.

Contact: Keyword. Tel: 01-437 6900.

Do you dispose of sensitive documents by shredding them? If so, do you realise that typewriter ribbons pose an equal threat if they are just thrown into a waste-paper baskets?

Ribbon cassettes cannot be put through ordinary shredders and it is not safe to burn them without taking special precautions.

Eba Imago has a unit called Carbon 2000 which destroys whole ribbon cassettes in bulk. Videocassettes, floppy disks, files and similar office items which cannot be dealt with by ordinary paper shredders can also be successfully destroyed with the Carbon 2000.

Contact:Eba Imago. Tel: 0635 63208

Non-abrasive Cleaner

Proguard have introduced what they claim to be the world's first dry Head Cleaner which is totally non-abrasive.

Guaranteed for 50 cleaning cycles, Proguard Head Cleaning Disks have a light transmissivity of 0.01% and static generation is virtually nil.

Contact: Proguard Computer Products Ltd, 1 Wolsey Road, Hemel Hampstead, Herts. Tel: 0442 56860.

Laser Range

Mekom Computer Products have launched a range of Automatic Cut Sheet Input and Output devices.

Laser Feeder features dual input cassettes holding 200 sheets each; 50 envelope capacity magazine; and optional 400 sheet forward collated output stacker.

More flexibiltiy is offered by the Multi Feeder, with six input cassettes.

Both are fully compatible with the Canon LBP-8 A1 and Hewlett Packard Laser Jet. Prices start at £1190.

Contact: Mekom Copmputer Products Ltd, Enfield Hall, Enfield Road, Edgebaston, Birmingham B15 1QA. Tel: 021 454 2288.

Plug-in PC Workstation

Primatel now offer a workstation complete with the facilities necessary for the efficient operation of a PC.

Features include a paper storage shelf; paper catch tray; storage cupboard; supplies drawer; four-way mains adaptor; fused mains isolator; lockable castors; and a 30mm thick post-formed worktop.

The measurements of this workstation are 150cm long x 60cm deep x 71cm high.

Contact: Primatel Products Ltd, Unit 4, Norbury Trading Estate, Craigness Avenue, London SW16 4RW. Tel: 01-679 4428.

Promises, promises

PC Promise is a new data management system from Duncan Databases Ltd.

The package is designed to allow first-time users to be able to understand it and enter data within a few minutes. It is also powerful enough for professionals to develop full scale systems.

Designed for IBM PC and compatibles, with a minimum of 128K memory, PC Promise features over a million records per database, depending on hardware configuration and operating system.

Fields are of variable length up to 1800 bytes per field, with 250 fields per record. Fields can be added, deleted or changed without the need to reorganise files.

Other features include: up to 10 database files open simultaneously; 15 digits of numerical precision; screen painting for full screen formatting; user definable menus and help screens; screens can be redefined as windows; context sensitive help available on line.

PC Promise can be interfaced with Dbase III, Wordstar, Lotus 1,2,3, and ASCII files.

A free demonstration disk is available which allows you to create and actually work your own mini database, identical in all respects to the real thing only of limited capacity.

The package costs £175 plus VAT.

Contact: Duncan Database Ltd, 9 Chestnut Grove, New Malden, Surrey KT3 3JJ. Tel: 01-942 2538.

Women VDU operators suffer more serious and more frequent symptons than men reports a survey carried out by Health and Safety at Work magazine.

This is apparently because: "Not only are women engaged in more repetitive and less varied tasks than men at the VDU. They also work longer hours and for longer periods without a break than men."

Of the symptons suffered by all VDU operators, eye strain afflicts more than 70% of users. Another 53% are reported to experience painful or stiff neck or shoulders, while 57.6% complain of fatigue.

Whilst eye strain is the most common problem, irritability was mentioned by 39.2%!

Y-E-S COMPUTERS

P.C. MEMORY UPGRADE KIT

LOW COST MEMORY EXPANSION
ENLARGE YOUR SPREADSHEET

256k-512k **£80**
256k-640k **£105**
Inc. postage & package — Excl. V.A.T.

Contact: BILL VALENTINE

YORKSHIRE
ELECTRONICS
SERVICES
LIMITED

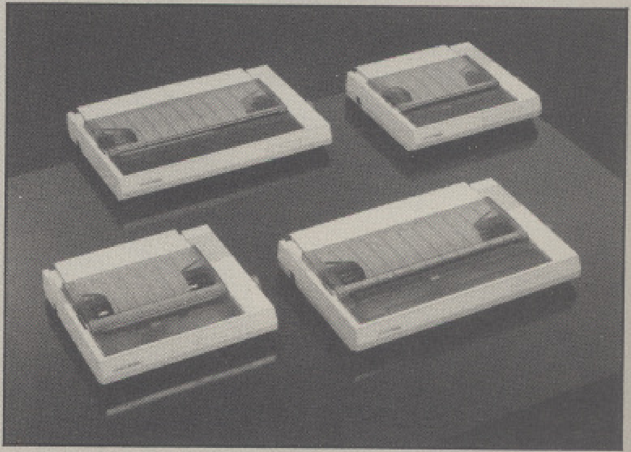
CAXTON HOUSE
17 FOUNTAIN ST.
MORLEY, W. YORKS.
Tel. 0532 522181

FOR COMMODORE SERVICE IN YORKSHIRE

Win PC Printers!

This month we are giving away a Citizen MSP-10 printer and a Penman Printer/Plotter to the first two correct entries out of our competition sack.

Just answer the following questions and complete our tie-breaker in no more than 10 words.



Q Which printer is the MSP-10 in direct competition with?
A ....

Q What is the draft quality speed of the MSP-10?
A ....

A Citizen MSP-10 would benefit my business because
....

The Closing date is 20 February 1986.
All entries must be accompanied by a business card.

Business Competitions,
CCI,
Finsbury Business Centre,
40 Bowling Green Lane,
London EC1R 0NE.

Name ____________________________

Address ____________________________

____

Company ____________________________

An Epson in Commodore clothing!

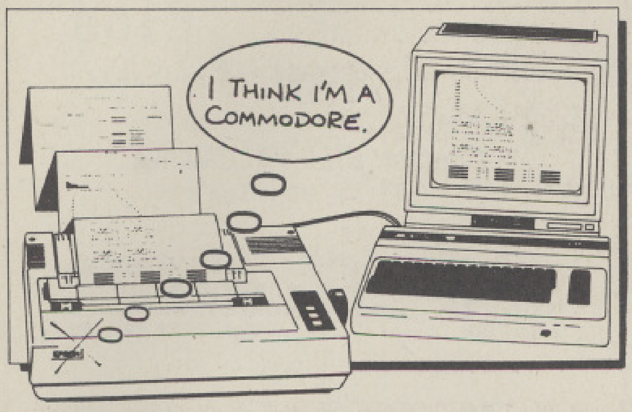
NOW AVAILABLE FOR KAGA-TAXAN/CANON

How many Commodore home computer owners, when faced with buying a printer, have longed to own an Epson but been put off by the problems involved? Firstly, it's not easy to connect the two together. Secondly, even when connected, it may be necessary to load driver software or the cartridge slot may be unusable. Finally Commodore-specific characteristics such as graphics and formatting commands will not be available.

Now Micro Control Systems have the solution. Just plug the Comprint circuit board inside the Epson, connect the cable supplied to the Serial I/O port on the Commodore computer and Hey Presto! The Comprint fools the Commodore into thinking it is working with a Commodore printer. All the features are there – total emulation. And it even provides a 2K buffer as well.

What's more all the additional features that have made Epson so successful, such as condenced print and other type styles, are accessible directly by the Commodore computer. For the business user the ability to use 15 inch paper (in the MX/RX/Fx-100 range) and print a £ sign (or other Epson special characters) will prove invaluable.

So go on – spoil yourself. If you are the owner of a Commodore personal computer treat yourself to an Epson – and a Comprint of course!


I THINK I'M A COMMODORE.

FOR COMMODORE PC USERS
Internal Buffered Interfaces Serial and Parallel with capacities from 2K to 128K available for Epson and Kaga-Taxan/Canon Printers.

COMMODORE 8000, PET USERS
Buffered IEEE 488 Internal Interfaces with capacity up to 64K available for Epson.

DEALERS PLEASE NOTE
AVAILABLE FROM

Northamber	01-391-2066
STC Electric Services	0279-26811
Westwood Distribution	021-643-8680
Data Distributors (Taxan)	0442-60155
Micro Peripherals (Canon)	0256–473232
A-Line Ltd	0533-778724

"Presents excellent value for money... a worthy purchase for any Commodore 64 or VIC 20" – *PCN, January 12th, 1985.*

"This is one of the most versatile interfaces I have used... a combination that will do almost anything you ask of it" – *Commodore User, January 1985.*

"Undeniably an interface to look at" – *Commodore Computing Int., May 1985*

micro control systems

Available from:– **Prices £61.99 inc VAT** Please add £1 P&P

CHROMASONIC
48 JUNCTION ROAD
ARCHWAY
LONDON N19 5RD
TEL 01-263 9493

OR

A-LINE DATASPEED
DEVICES LTD
3 AUBURN ROAD
BLABY, LEICESTER LE8 3DR
TEL (053758) 486

DISTRIBUTOR
ENQUIRIES TO:–
MICRO CONTROL
SYSTEMS LTD
TEL (0602) 391204

. . . the noise from our printers used to be terrible until we fitted them with FERNHILL acoustic covers . . .

They reduce the noise by about 85%, and fit all formstractors and sheetfeeders with a model to fit just about any printer you can think of including COMMODORE, DIABLO, DIGITAL, FACIT, GE, IBM, NEC, QUME, RICOH, TEC and WANG.

As the major British manufacturer of Sound Controllers and silencing equipment we are able to offer a comprehensive range of models to suit all your requirements on design, quality and price.

FES ***Fernhill Equipment Sales Ltd.***

Unit 13 St. George's Industrial Estate Wilton Road
Camberley Surrey GU15 2QW
Tel. Camberley (0276) 20010/66474. Telex. 858893-Fletel G

Tried and Tested

Commodore has tested numerous packages on its PCs to confirm compatibility. The following is a list of the packages that have been successfully tested so far.

INTEGRATED SOFTWARE
Framework
Open Access
Smart
Symphony
Xchange

ACCOUNTING SYSTEMS
Colt Attache Business Systems
Colt V5 Single & Multi-User Systems
Compact Accounting System
Genesis Accounting Systems
Integrated Accounts & Stock Control
Stockmaster II
Pegasus Accounting Systems
Sage Accounting Systems

DATABASE SYSTEMS
Archive
Brainstorm
Cardbox
Cardbox Plus
Datastar
dBase II
dBase III
DMS Delta
DMS Delta IV
DMS+
Everyman
Friday
Infostart+
Perfect Filer
Rescue III
The Sensible Solution

WORD PROCESSING
Addressbook
Easywriter
Multimate
Perfect Writer
Quill
Spellbinder
Superwriter
Volkswriter
Word
Wordstar
Wordstar Professional
Wordstar 2000

SPREADSHEETS AND STATISTICAL ANALYSIS
Abacus
Easy Planner
Logistix
Lotus 1-2-3
Multiplan
Perfect Calc
PFS: Plan
Powerplanner
Sideways
Statpack
SuperCalc 2
SuperCalc 3

FINANCIAL MODELLERS
FastPlan
Micromodeller

GRAPHICS
Chart
Chartstar
Dataplot
Easel
ExecuVision
Microcad

PROJECT PLANNING
Cleva
Elcon
Estimaster
Pertmaster
Pertprinter
Project
SuperProject
Total Project Manager

USER UTILITY PROGRAMS
Interchange
Jeeves
Norton Utilities
Print Works
Prokey
Sidekick
Sideways
Spotlight

PROJECT PLANNING
Cleva
Elcon
Estimaster
Pertmaster
Pertprinter
Project
SuperProject
Total Project Manager

USER UTILITY PROGRAMS
Interchange
Jeeves
Norton Utilities
Print Works
Prokey
Sidekick
Sideways
Spotlight

COMMUNICATION & TERMINAL EMULATION SOFTWARE
AST-5251/11
AST-5251/12
Bstam
Chit Chat
Comptel
Crosstalk
Datatalk
Easylink
Intelpost Courier
Move-it
PC to Mac & Back
PFS Access
Remote
Softerm PC
Transporter
VTerm
VTerm II

COMMUNICATIONS BOARDS & NETWORKING PRODUCTS
3270 PC Connection
3278/79 + PC Connection
AST 3780
AST-PCnet II
HiNet
Irma 3270 Emulator
Irmaline
Irmalette
PC Net
SixPakPlus
UltraFrame

OPERATING SYSTEMS
Concurrent CP/M 86 (& with Windows)
Concurrent PC-DOS
CP/M 86 with GSX

PROGRAMMING LANGUAGES
BASIC Compiler
BASIC Interpreter
Business BASIC Compiler
C Compiler
CBASIC Compiler
CIS COBOL
COBOL
DR C Language
DR Logo
Fortran
Fortran-77
Level II COBOL
MS Pascal
PL/1
ProFortran
ProPascal
RM/COBOL

PROGRAMMING AIDS
Access Manager
Display Manager
DR Assembler
Forms II
Macro Assembler

BOS BUSINESS SOLUTIONS
BOS/BACS
BOS/Fixed Assets
BOS/Inventory Control
BOS/Invoicing
BOS/Job Costing
BOS/Nominal Ledger
BOS/Payroll
BOS/Purchase Ledger
BOS/Sales Ledger
BOS/Sales Order Processing

BOS SPECIALIST MARKETS
BOS/Negotiator
BOS/Seams

BOS OFFICE AUTOMATION
BOS/Finder
BOS/Office Automation Pack
BOS/Planner
BOS/Writer

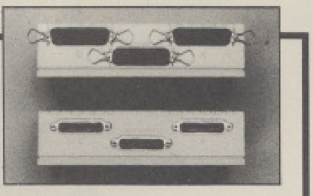
BOS PROGRAM DEVELOPMENT
BOS/AutoClerk
BOS/MicroCobol
BOS/MicroCobol APF

BOS COMMUNICATIONS SOFTWARE

BOS OPERATING SYSTEMS

BOS UTILITIES

BOS VERTICAL MARKETS



Same Day Despatch

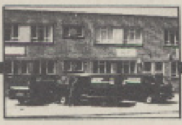
Data Switches
Cable
Connectors
Cable Assemblies
Custom Cables

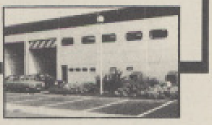
National Site Work

On Site Data Cabling
Mains Cabling
Air Conditioning

If you require our catalogue or more information on any of our services please contact our Reading Sales Office 0734 591051 or Warrington Factory 0925 572407

GDC
The Computer Cable Specialists



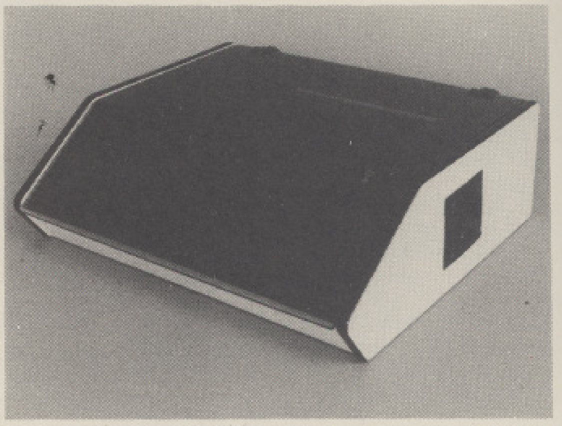


G.D.C. Limited. (General Data Cables)
71 Milford Road, Reading, Berks RG1 8NA
Telex 847025
Telephone: Reading (0734) 591051

G.D.C. Limited. (General Data Cables)
Unit 4, Colville Court, Winwick Quay,
Warrington, Cheshire WA2 8QT
Telephone: Warrington (0925) 572407

ACOUSTIC COVERS

RETAIL PRICES FROM
£135* EX WORKS
*** As shown**



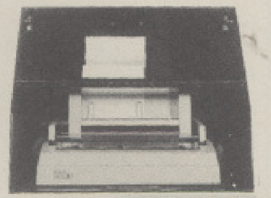
Models from stock to suit all popular printers/word processors

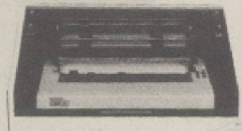
Dealer Enquiries Welcome

LMF (UK) LTD
The Old Brewery Kilton Road Worksop S80 2DE
Notts – Tel: 0909 482594

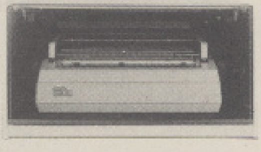
VENTGUARD
ACOUSTIC COVERS

The Sound of Silence for the Electronic Office





Brother: CPT:
Diablo: Epson,
Facit: Honeywell,
IBM: JUKI,
Mannesman-Tally,
NEC: Olivetti: Philips,
Qume: Ricoh: Tandy,
Wang: Wordplex: Xerox.



Phone us now for
instant attention or write to:

T. MAT Limited, Sullivan Way, Loughborough
Leicestershire LE11 0QS
Telephone: Loughborough (0509) 217171 Telex: 341819

ACOUSTIC COVERS

Printer and V.D.U. Stands

Counter-balanced Acrylic lid.

Single source electrical system with illluminated switch.

Noise reduction 95%.

Full range of covers for all makes of printers.

MONARCH ACOUSTICS
Unit 12 Highview Avenue Keyworth
Nottinghamshire NG12 5EL
Tel. (06077) 6606

Colourful PC

Looking at Commodore's colour PC and some interesting peripherals.

With the recent addition of a colour PC to their range of business machines, Commodore now have a really complete range of machines with which to attack the business sector.

Whether or not their dubious timing (almost simultaneous with the Amiga's public launch) will dampen anybody's excitement is yet to be seen. Almost every businessman who regularily uses his PC will find moments when he wishes that his PC had a graphics and colour board, allowing him to produce graphics to explain an otherwise unintelligable mass of figures and data.

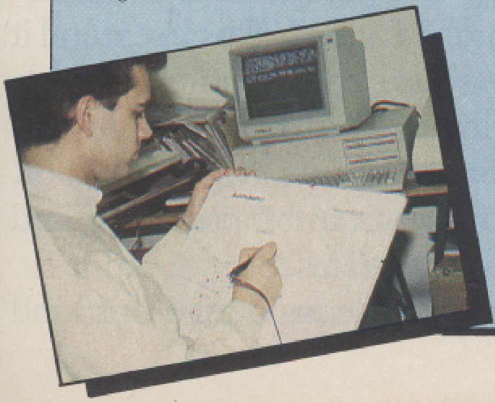
Commodore's new colour PC has a maximum resolution of 640 x 200, and 16 colours to chose from (although all 16 colours are only available in text mode). In medium resolution (320 x 200) you have a choice of two four-colour pallettes, with which you can create very effective graphs and charts, as well as some pretty pictures!

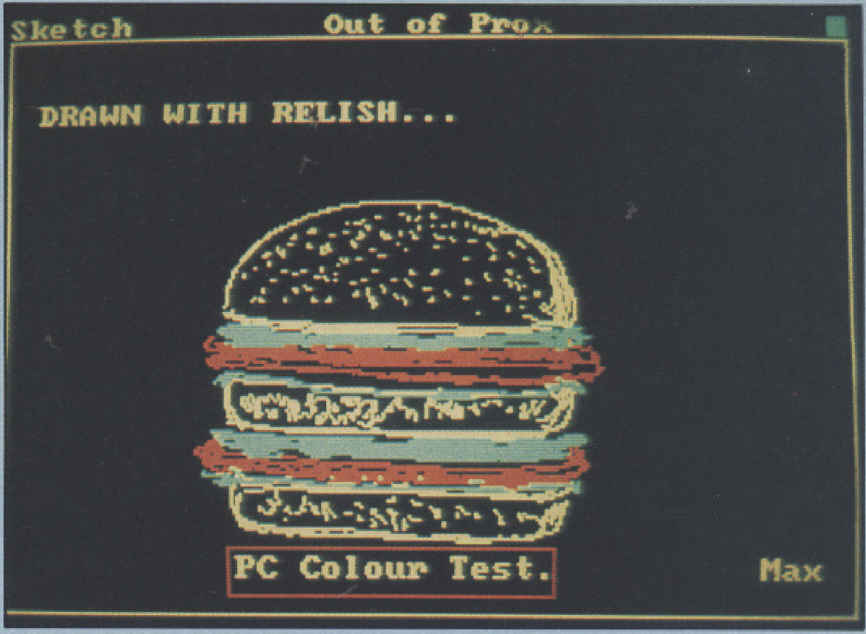
Commodore seem to have also realised that people may wish to upgrade their current PC10 or PC20, and I think that they will accept a wide variety of third party colour boards.

As expected the colour PC is 100% compatible with the normal b/w version, and externally there are no differences at all.

Unfortunately the colour PC is still a dated machine – when compared with the similarily priced Amiga it's a joke. Then again the Amiga's software base is minute, and the PC'c cerainly isn't!

If you really do need a PC, and cannot wait for the Amiga's promised IBM emulation program, then the Colour PC10 and 20 are as good compatibles as I've seen, but remember – that's all they are, though excellent value in their class.





Thompson Colour PC Monitor.

In a very full market, it's always surprising to see another company try to make a really big dent. Thompson have a new range of monitors for the 128, PC and more recently the Amiga.

The monitor I am reviewing, designed for the colour PC, has well over 10 different companies to compete with, as well as IBM's own monitor which although vastly overpriced, is very good.

The Thompson's first good point is it's size – small and neat. Coloured in the same dull grey as the Commodore PC, it fits neatly on top and is pleasant to look at as well as use. For me, the one feature that really makes this monitor good is the ability to switch screen colours. If you've ever had to use a green monitor all day, you really will appreciate the ability to choose whether you want to have a green, amber or black and white screen display. Personally I like using the Amber display, as it seems to strain the eyes a lot less than any of the other options.

When used with the colour PC the monitor provides very nice clear graphics, although ours required a little setting up to avoid the corners of the image being squashed.

Overall I rate the Thompson Monitor very highly. In use it proved to be one of the nicest monitors I've used with the PC.

SummaSketch and Paintbrush.

If you do not use your PC only as a business machine in the purest sense of the word – wordprocessing, database, and spreadsheets – and want to try and create something a little more imaginative, you will need to obtain a peripheral that alllows you a little more scope than just the keyboard. To go with it you need software that makes the most of both the machine and the peripheral.

One company that produces this type of hardware and software, and which is totally compatible with the Commodore PC, is Summagraphics. Their SummaSketch Graphics Tablet, combined with Paintbrush software will give many people an unexpected chance to be artistic on a PC.

Almost everybody will have seen a graphics tablet at some point, although normally they are associated with more expensive dedicated CAD (Computer Aided Design) machines, or as glamorous but useless toys for home computers. SummaSketch is neither of these, providing a useful and fun alternative to the more normal methods of producing graphics.

When you first set up the SummaSketch, the immediate reaction is how accurate the pen you use is. Once calibrated properly it is quite possible to trace pictures from the tablet to the screen with quite reliable accuracy.

The daunting task of choosing a business system becomes far more enjoyable when you consider the new Commodore PC's pedigree:

Made by the first micro-computer company to achieve a £1 billion turnover.

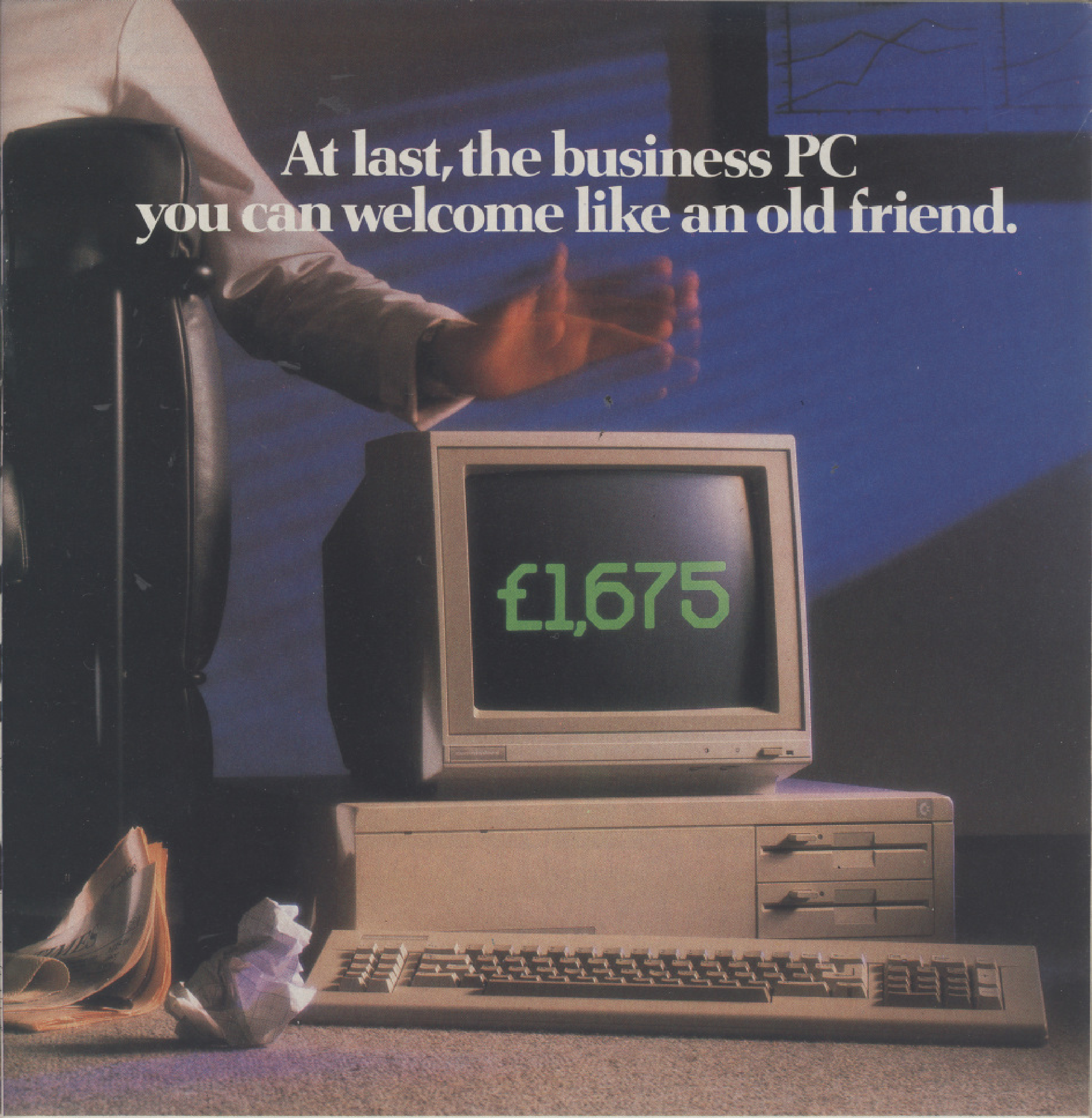
Follows on from the PET: not only the UK's first, but also its most successful micro-computer.

Genuinely IBM® PC compatible, so you gain the full benefit of the latest and best software, and can handle all your business needs including database, spreadsheets and wordprocessing.

Full 12 months Warranty and Commodore's PC Cover Plus to extend it.

The basic specifications include dual 5¼" floppy disk drive, (hard disk version will also be available), 256K RAM, interfaces, a 16 bit processor, and the big 12 inch screen.

The price, considering this kind


At last, the business PC you can welcome like an old friend.
£1,675

of pedigree is quite outstanding: £1,675.

Any of the other major comparable PC's will cost you, at the very least, 10% more.

Finally there's a tailored leasing package and all the top-class training and service backup you'd expect.

You're welcome to come and see a demonstration at your local Commodore dealer. Full details are on PC Hotline telephone: 0536 205252.

For further details send this coupon to the
Commodore Information Centre, 1 Hunters Road,
Weldon, Corby, Northampton NN17 1QX.

Please send me full details of the new Commodore PC, and the address of my nearest dealer.

NAME ______________________

COMPANY ______________________

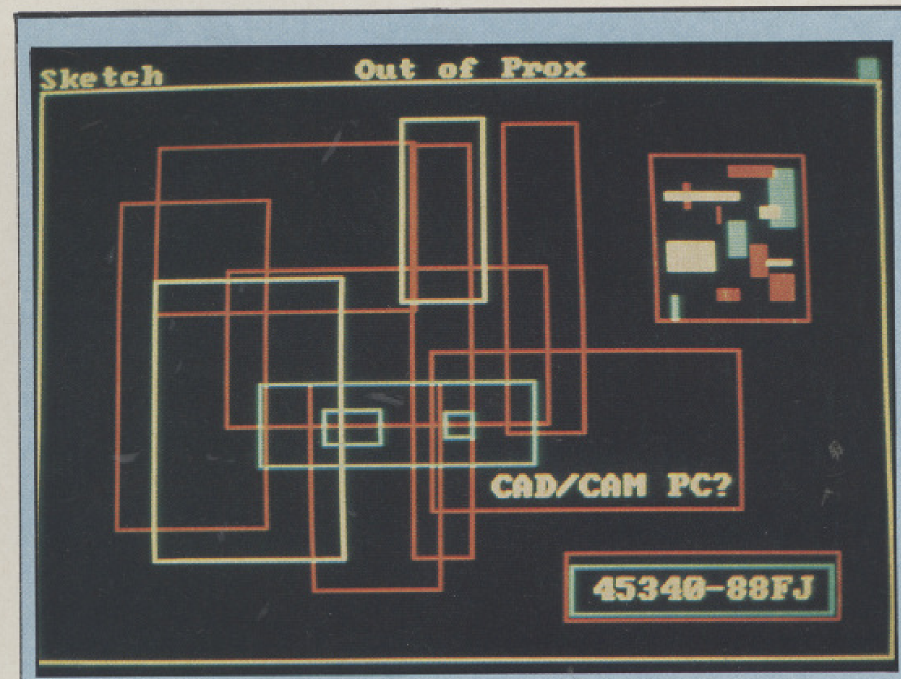
ADDRESS ______________________

____

commodore

PC CCI3 86

IBM IS A REGISTERED TRADEMARK OF INTERNATIONAL BUSINESS MACHINES CORPORATION.



Although you only have a pallette of four colours to choose at one time, there are two pallettes in total – the first consisting of Red, Green, Yellow and Black and the second Pink, White, Blue and Black.

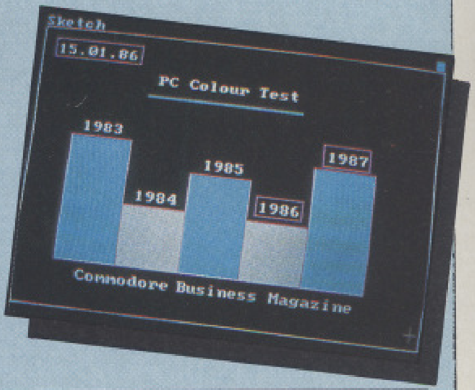
A wide variety of options allow you to create some pretty impressive results, although it does depend completely on your artistic prowess, which is why my pictures were so pathetic! As well as the usual options such as line, circle, box and sketch, Paintbrush provides some really nice alternative commands such as pick; this allows you to – in effect – create a brush of your choice from whatever else is on the screen, including any previously drawn pictures.

Frame was another command I used regularly, especially when creating any form of business chart (something that really is very simple and took me only a matter of minutes). It allows you to create a wire line box around whatever you wish, and is both fast and accurate.

The spray command allows you to present air-brush type strokes to add an attractive three dimensional effect. Being able to erase mistakes is also catered for, but unfortunately you cannot undo any inadvertant errors, as our illustrator found out to his cost!

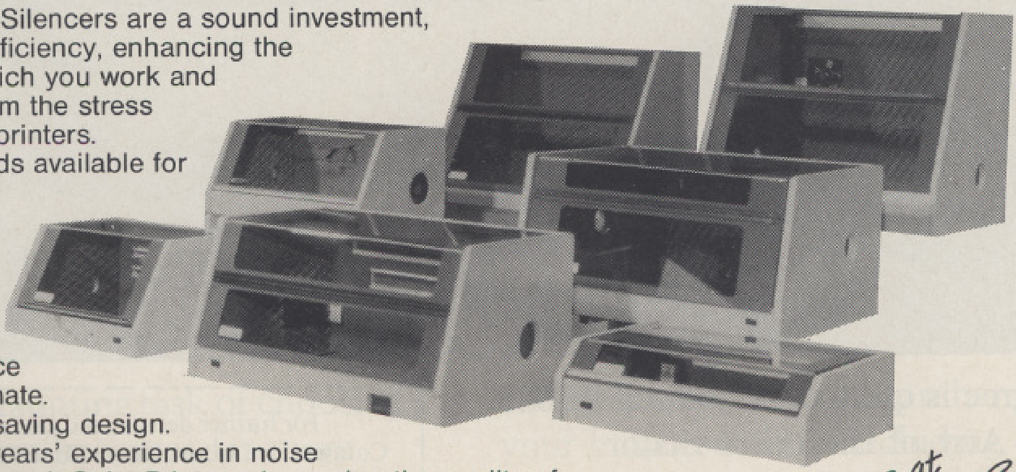
Overall SummaSketch is an impressive product to say the least. Used in conjunction with a decent paint program, I can see many useful as well as artistic results being produced.

Even if you cannot see yourself becoming a budding Warhol, SummaSketch could still prove to be a practical business product.



Invest in silence.

Quiet Print Printer Silencers are a sound investment, improving office efficiency, enhancing the environment in which you work and providing relief from the stress induced by noisy printers.
With acoustic hoods available for virtually any type of printer, Quiet Print provides:
*Optimum noise reduction.
*Easy access for printer maintenance
*Safe working climate.
*Attractive space-saving design.
With over twenty years' experience in noise control, Quiet Print are improving the quality of life in offices and computer rooms worldwide.



See us at The Which Computer Show on stand 2048

ZERO
QUIET PRINT EUROPE
Norton Street, Hockley, Birmingham B18 5RQ. England
Telephone: 021-554 2001. Telex 337016 SAMGRO G

POST THIS COUPON FOR FUTHER INFORMATION ON THE QUIET PRINT RANGE
NAME.......................................COMPANY.......................................
ADDRESS.......................................TEL.......................................
TYPE OF PRINTER USED:.......................................TRACTOR FEED ☐ SHEET FEED ☐

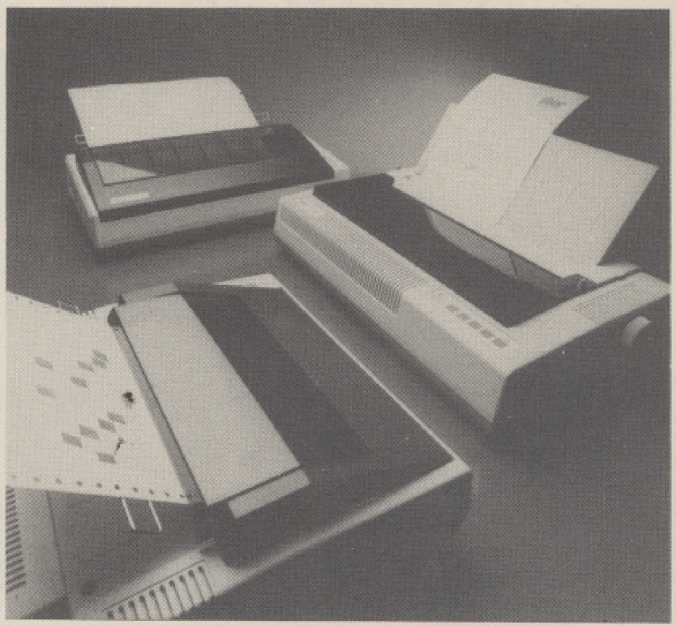
STAR

The Totally IBM Compatible Printer

STAR SG15 – 120 CPS, NLQ 136 Columns, 16K Buffer **£389.00**

STAR SD15 – 160 CPS, NLQ 136 Columns, 16K Buffer **£489.00**

STAR SR15 – 200 CPS,NLQ 136 Columns, 16K Buffer **£589.00**



We are the largest UK distributor for **STAR.** Our Dealer support and backup is second to none – for further Dealer details on the superb range of printers – contact us now! – it could well be the most lucrative call you have ever made.

MODEHART LTD, Unit N3, Renshaw Trading Estate, Millmead, Staines, Middx, TW18 4QU.
Tel: Staines (81) 62405/6. Telex No. 8951182 GECOMS G

New Products

Think British, buy British, buy *PRIMATEL*

All your Systems Furniture from one manufacturer.

Primatel P.C. Mobile Workstation

- Paper Storage Shelf.
- Paper Catch Tray.
- Storage Cupboard.
- Supplies Drawer.
- Fourway mains adaptor.
- Fused mains isolator.
- Lockable castors.
- 30mm thick post-formed worktop. Unit size 150cm long x 60cm deep x 71cm high.

Silencer Cover
Incorporating storage cabinet/printer stand.
Units can be purchased separately.
Over 250 models to choose from.

Desk Top Printer Stand
Heavy duty stand also available.

PRIMATEL PRODUCTS LTD.
Unit 4, Norbury Trading Estate, Craignish Ave.,
London, SW16 4RW. Tel: 01-679 4428

PC Wordprocessing

If you have a Commodore PC, a word processor should be a basic software investment for you. Even if you have bought the machine primarily for some other purpose, you will find that a word processor more than repays its cost in time and trouble saved – and in quality of results.

Which package to buy, though? Which has the features that you are going to need? What are the real differences between the cheap, 'easy to learn' packages and the elaborate expensive ones? Advertisements and short dealer demos do not always make this clear.

Establishing Your Needs

Before you even begin to look at possible packages, you should be clear in your mind exactly what you want from a word processor. By this, I do not mean whether you are a novice, a whizz touch-typist or a would-be occasional user – though these are all aspects that dealers tend to pick up on. I mean what kinds of document you want to produce, and what specific features you intend them to have.

Take along to your dealer some examples of your company (or private) style of letter, memo and report. How do you like headings to appear? Do you use headings in mid-page, or only at the tops of pages? Do you often need to produce indexes or tables of contenets? Where do you like page numbers to appear? Do you regularly need to produce indented numbered paragraphs, sub-paragraphs and sub-sub-paragraphs? Do you use subscripts, superscripts, special foreign or scientific characters?

It is all too easy to assume that a word processor simply must do exactly what you want it to do. Sadly, that is not true. As an author and journalist, for example, I snarl over packages that will not number pages at the top-right (some offer bottom-of-page only) or that will not provide a word count (many packages won't). Others grumble over packages that won't produce one-and-a-half spacing, or won't generate a pound sign on their printer. Such failings are common; they are all specific to individual packages. If the package you are shown doesn't do exactly what you want, then ask for one that will. There will be one, if you look hard enough.

Some failings are unique to program-printer combinations, and it is very important to ensure that you obtain a program that fully supports your printer, especially if you have an expensive printer with advanced features like alternate fonts or microspace justification. Almost every word processor has support for the Epson FX-80, for example; only a minority will have support for any specific daisy wheel printer. Most programs have support for a limited number of named printers, plus a 'catch-all' category for other common types of printer. 'Catch-all' support will enable your printer to do the basics only. It will not provide full support for its special features.

Cheap Packages

Business software is extremely expensive, unreasonably so many would say. Partly in response to this realisation, there has been a recent trend for word processors to fall into two different classes: cheap packages generally costing between £100 and £200, and more expensive full-featured packages costing between £250 and £500.

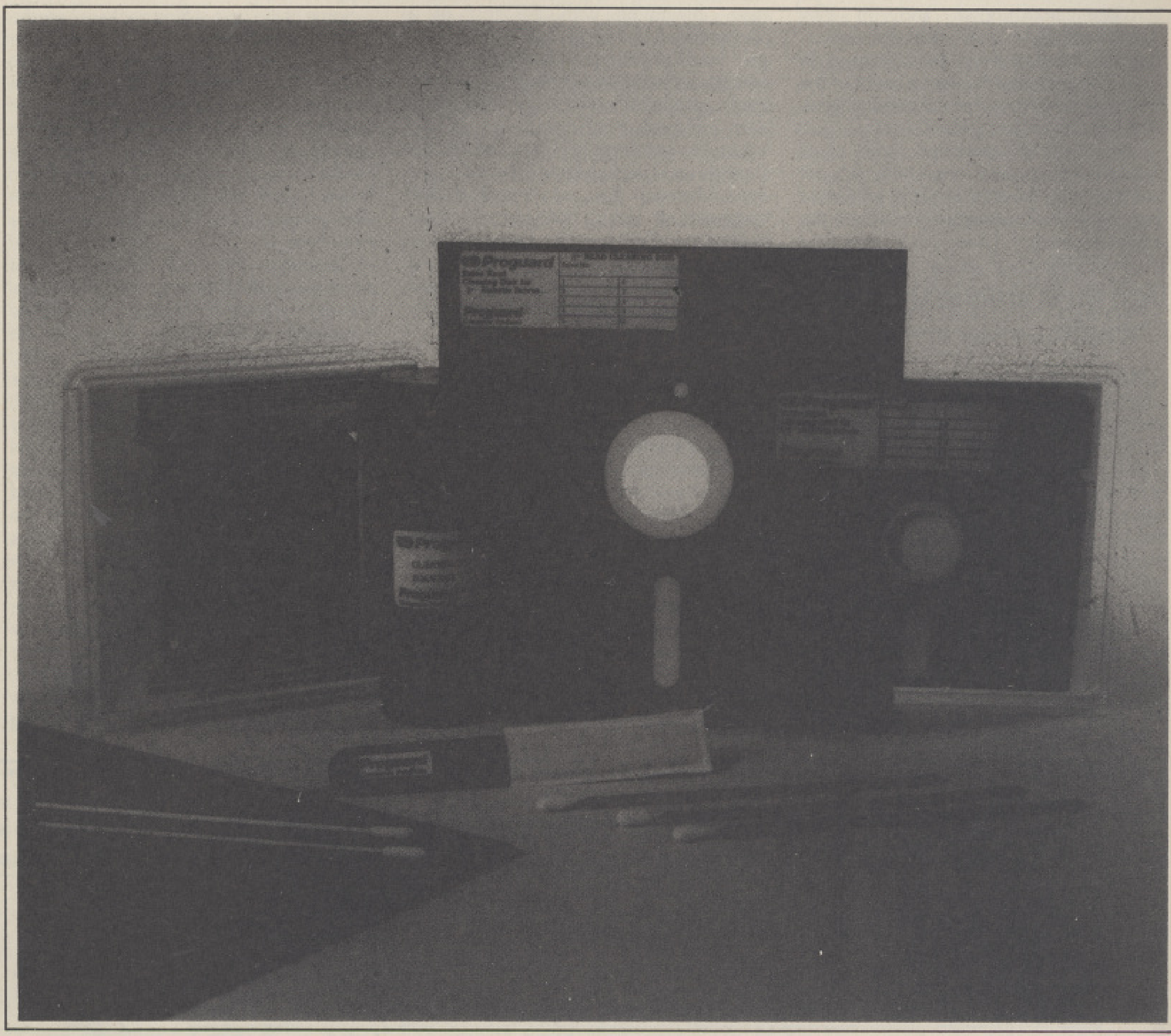
Often the cheaper packages – like Micropro's Easy, Pfs:Write, Bonnie Blue and Perfect Writer II – are specificallly billed as suitable for first time or occasional users. They are claimed to be easier to use than their more complex and expensive rivals.

Is this so? Only to a very limited extent. Almost all word processing programs are simpler to use today than were their predecessors five years ago. Ergonomics and on-screen help facilities have improved beyond all recognition. This is as true of expensive packages such as Microsoft Word, as of the cheapies.

The major difference with the cheap packages is that on the whole there is less to learn. Of course if a package does less, it takes less time to master. The menus will be simpler, the manuals much smaller. (A very real point: with Multimate Advantage, a highly complex word processor cum database, there are over 1000 pages of manual spread among four different volumes to plough through.) But a well designed complex package will also be accessible to occasional users who make no attempt to learn all its advanced features.

The great drawback among the cheap packages is the poor standard of screen handling that many of them show. The program may lag behind a moderately complex typist, so that words only show up

PROGUARD, THE MOST USER FRIENDLY CLEANING DISK IN THE WORLD



Introducing the all new PROGUARD CLEANING DISK in 3½″, 5¼″ and 8″ configurations incorporating a dry head cleaner with a patented bonding process to give you a multi user capability with each size of disk.

There are no extraneous marks on a Proguard disk and the light transmissivity factor is reduced to 0.1% which exceeds both ANSI and ECMA standards.

Available in three sizes in either Proguard brand or private label configurations.

All Proguard Cleaning Disks are guaranteed for 50 cleaning cycles.

Maintain cleanliness in your computer environment with PROGUARD COMPUTER CLEANING Products.

Available from your local stockist

Proguard™ Computer Products Ltd.

1 Wolsey Road, Hemel Hempstead, Hertfordshire HP2 4TU, England.
Telephone: (0442) 56860 & 47275 Telex: 827501 GDISPO G

Patents 8428012 U.K. 843083817 European
U.S. Patents Pending

on the screen some time after they are typed at the keyboard. Cursor movement may show particularly chronic delays. Scrolling, both down and up long documents and across wide documents, may be extremely jerky. These features do not make programs easier to use. On the contrary, they prove a real disadvantage to both regular and occasional users.

Some cheap packages also lack 'background printing' (the ability to print one file while another is being edited), a feature which is normally standard on the expensive ones.

Best Buys among the Cheapies

My favourite cheap word processor is America's favourite: Pfs:Write. It is a slick package with a well chosen range of basic facilities including a good spelling checker, and it is integrated with the rest of the excellent Pfs range. More than occasional users may however feel restricted by the lack of advanced facilities. The program is no easier to learn, in my opinion, than the best of the expensive ones.

A good alternative is Perfect Writer II, a great advance on the original Perfect Writer program, and a real bargain at around £150. This has neat pull-down menus, an excellent windowing facilty (which lets you hold up to seven documents in memory and refer to any two of them onscreen at once), a spelling checker plus – most unusually – a thesaurus facility, and again integration with the rest of a comprehensive range. It also has advanced formatting capabilities, but these are not particularly well integrated with the simpler facilities, and can be difficult to learn and confusing to operate.

Screen handling problems mark the other three cheap programs I am familiar with, Micropro Easy, Bonnie Blue and Vizawrite. I found the last of these particularly disappointing, because I was so impressed by the Commodore 64 version of the program. All three have good features, but oh, if only they worked more smoothly....

The Workhorses

If you are going to use a word processor heavily, then the extra £200 or even £300 on the price tag is a small price to pay for real quality, compared to the real cost in time and effort involved in mastering any program. Do look at one or more of the high-quality, high-price packages.

You will almost certainly find that the more expensive packages have wider support for peripheral hardware – including colour monitors, graphics boards and most important of all, printers – than do the cheaper ones. If you paid £1,000 or more for a high quality printer, it makes sense to pay that little extra, if necessary, to obtain a word processor that supports it fully.

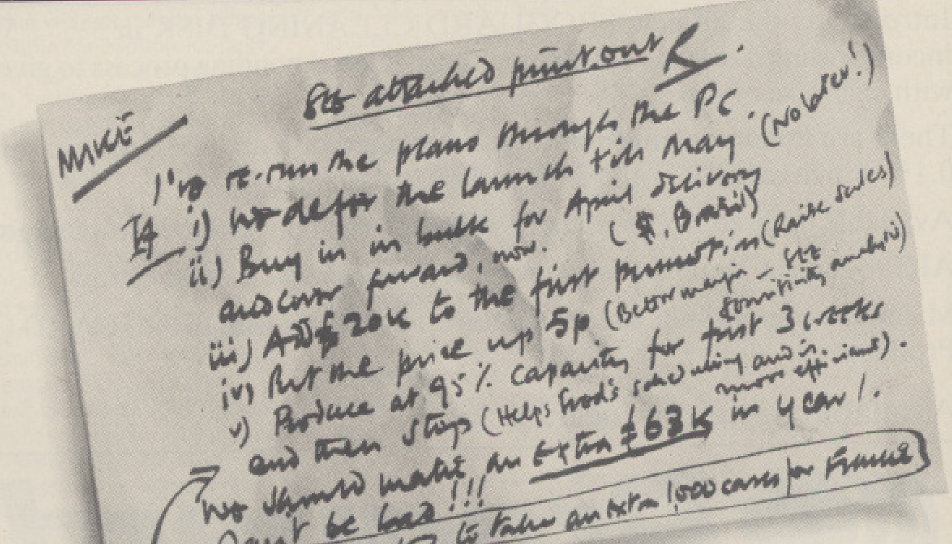
Some of the best-selling packages are the long-established ones with a large user base. WordStar sells on its name; Displaywrite on IBM's name. Though both are reliable packages with powerful features, they both show their age in comparison with newer rivals. They are harder to learn and clumsier to operate. Unless you need compatibility with existing users, I feel you can do better elsewhere.

I have three favourites. All are excellent programs, with a large range of features, reasonably easy to learn, and in my experience very reliable. These are all programs I am personally familiar with, though I should stress that there are other highly-rated programs – Wordstar 2000, for example – that I do not mention simply because I do not know them as well.

The first is Word Perfect. A deceptively simple program, neatly designed, and much less pretentious than some of the elaborate ones. It comes with one modest manual and a tiny key template; its screen display is simple and uncluttered. Though it has its failings – the routine for swapping printers sometimes has me stamping my feet in fury – I generally turn back to it with relief after each new package I review.

Almost everything about Word Perfect functions smoothly and simply. Everything

I'M A GREAT COMMUNICATOR BUT MY COLLEAGUES NEVER UNDERSTAND ME.



See attached print-out K.

Mike

I've re-run the plans through the PC.
If i) we defer the launch till May (no later!)
ii) Buy in in bulk for April delivery (£.Brazil)
and cover forward, now.
iii) Add £20K to the first promotion (Raise sales)
iv) Put the price up 5p (Better margin – see sensitivity analysis)
v) Produce at 95% capacity for first 3 weeks and then stop (Helps Fred's scheduling and is more efficient).
We should make an extra £63K in year!
Can't be bad!!!
(vi) Pressure K2 to take an extra 1,000 cases for France

is customisable, so my version now fits me like a glove, and after using it for a year I have yet to need any feature that it cannot provide.

Microsoft Word is a more ambitious package in many ways. It has multiple onscreen windows where Word Perfect limits itself to dual document capability; it has extremely advanced support for mice, graphics boards and other optional hardware. It is surely the ultimate package today for those willing and able to splash out on peripherals, and eager to make the best use of them.

At the same time, it is an easy package to learn, with very good help facilities and a beautifully designed training course on disc. Mouse-oriented word processing is a pleasure for good and poor typists alike, and much simplfies the chore of checking through and editing a document.

My major reservation is over Word's advanced document design capabilities, the so-called 'style sheets'. Enormously powerful for those who master them, they can be thoroughly impenetrable to novices and occasional users. If you don't want to, though, there is absolutely no need to learn or use them at all.

The last of my big three, Multimate has established itself rapidly as a big seller in the 'serious' word processing market, and with good reason. It is another powerful, well designed program. Unlike most modern programs it works with a page concept, rather than in whole documents, and this makes it extremely reliable and particularly suitable for integration with database facilities. The new Multimate Advantage package has very powerful information-handling features.

There are no multi-document facilities in Multimate, and this is particularly frustrating because it is impossible to see the end of one page and the start of the next on screen at once. A nuisance for creative writers, but much less so for many originator/secretary teams. The spelling checker is clumsy, and this is more of a drawback. Still, for business people anxious to integrate word processing with general information handling, this package is a very good choice.

Document Merging

'Merge' or 'mail-merge' facilities mean many different things to different people. If you feel you need this type of facility, then once again you should provide your dealer with specific examples of the type of work you expect to carry out, and ensure that the package you choose can cope with it.

Some programs have 'merge' or 'library' facilities that are intended not for mass-mailing type applications, but for boilerplating: fitting together standard paragraphs to make (for example) individual letters to clients. Solicitors and estate agents, for example, find it helpful to maintain a library of often-used paragraphs. Among the programs that perform this function well are Perfect Writer II, Word Perfect and Multimate.

'Mail-Merging' is more complex, because involves the linking of two files: one with a letter outline, and one with variable information that is to be fitted into that outline. Among the questions you might want to ask are the following:

I already have an address file of clients held on a database. Can I use it (without too much fuss) to produce information to be fed into form letters?

I'm willing to set up a special word processor file of client's names, addresses and other data. Does the program have a facility for printing envelopes or labels from such a file?

Can individual records from the file be selected for a particular print run? If so, how is this done? In advance, or before each letter is printed? How complex are the criteria for selecting letters?

Must the information in the file be used in precisely the order it is laid down in the file, or can it be used in variable order? (And can the same 'field' in the file appear more than once in the letter?) Obviously, the latter is much preferable.

As well as the expensive packages I mention above, an exceptionally good mail-merge oriented package (though I find it less satisfactory in other directions) is Samna Word III.

EASY DOES IT.

Managers like myself, who can almost make a PERSONAL COMPUTER sing, often make all the difference in business.

But to keep well ahead, it takes three additional things: communication, communication and communication.

Until I discovered Easy from the makers of WORDSTAR, I often found myself jotting notes to my colleagues or scribbling memos down in a hurry, only to find time wasted because no one made head or tail of my summaries - however amazing the facts and figures were.

Well look at them ! You'd have to have a degree in archaeology to decipher those hieroglyphics.

Precisely the sort of thing Easy has eliminated.

Easy is the first serious entry level Word Processing package that's easy enough for any executive - even me.

Used with IBM Microcomputers or compatibles, it produces beautifully intelligible documents like this one.

It makes altogether better use of my personal computer, eliminates the 'rough draft' or dictation stage, and with clearer letters, reports and memos, everyone's job is more efficient and a lot of valuable company time is saved.

Easy never allows you to get lost either, because the right prompts are always there to help you onto the next stage. There's also a spelling corrector, an 'undo' feature that allows you to restore accidentally deleted text, as well as many other sophisticated but easy features. Now, the mere £165 they sell it for is probably the only figure my colleagues still don't understand.

To learn more about Easy, ring your nearest distributor listed on the right.

FIRST SOFTWARE (0256) 463344
SOFTSEL LTD. 01-568 8866
SOFTWARE LTD. 01-278 2377
TRADESOFT LTD. 01-879 1144

MicroPro.

MicroPro International Ltd.,
Haygarth House, 28/31 High Street,
Wimbledon Village, London SW19 5BY.

Easy

SEE US AT THE WHICH COMPUTER SHOV

"dialog...

Professional Bu

for the CBM

C64 / C128

TRANSACT
Book-keeping System

TRANSACT is a Book-keeping System and Nominal Ledger package
Provides a flexible alternative to manually operated sytems
Observes normal accounting conventions
Suitable for Accountants and small business applications

Transaction Files emulate the manual Books of Prime Entry Sales, Sales, Purchases, Bank and Petty Cash transactions types
Standardised and fast Input format
Optional down-calculation of VAT & Net transaction values
Automatic Assignment of Debit and Credit Values
Validation checks to ensure that entries balance
Double Entry principals maintained at all times
VAT Input and Output accumulations recorded separately
Journal facilities provided for Accounts adjustments
Standard Reports & Audit Trail to screen and printer

Accounts File emulates the manual Nominal Ledger
100 Accounts available under 10 Section Headings
Bank, Cash, Debtor, Creditor & VAT Controls are pre-set
Two Accounts reserved for Accrual and Prepayment adjustments
Remaining 90 Account Headings may be defined and/or amended
Account Balances are updated by each Transaction File created
View or Print Account Heading, Balances & Section Totals
Full Trial Balance printout excludes null Accounts
VAT payments and rebates controlled through Clearance Account
Produces Profit & Loss figure and 'quick' Balance Sheet
C128 includes full final accounts

Price ☐C64 £34.95 ☐C128 £49.95

SALES LEDGER
and invoice processor

Open Item Accounting System
Fast creation of invoices from product tables
Multiple rates of VAT allowable on invoices
Suspense accounts for 'unrecognised' payments
Trade and settlement discounts allowable
Extensive reporting to screen and printer
Clients referenced by name or part name

Create Invoices and Credit Notes
Receive and Allocate payments
Print individual Statements of Account/Account Enquiries
Amend Terms
Amend Client Details
Suspense Accounts featuring automatic transfers of unallocated payments

Outstanding Invoices
Full Transaction Reports
Full Statement Runs
Monthly Sales Reports
Aged Debtors Lists
Mail Labels for clients Names and Addresses

Auto Invoice Numbering
Monthly deletions of paid invoices
Deletion Reports
Change date option

Requires no additional hardware
Runs on single or twin drive systems

Price ☐Disc £34.95

PURCHASE LEDGER

Open item Accounting System, Automatic payment runs, Print remittance advice notes, Allows for settlement and trade discounts, Cheque writing capability, Extensive reporting to screen and printer, Suppliers referenced by name or part name

Allocate payments or part payments against, Supplier invoices, Account Enquiries, Amend Supplier Terms, Amend Supplier Detals, Suspense Accounts for prepayments

Outstanding Supplier Invoice Reports, Full Transaction Reports, Monthly Purchase Reports, Aged Creditors Lists, Mail Labels for Supplier Names and Addresses

Monthly deletions of paid invoices. Deletions Reports, Change date option

Requires no additional hardware, Runs on single or twin drive systems

Price☐☐☐ Disc £29.95

SHOW ON THE COMMODORE STAND

Business Software

STOCK-AID
Stock Control System

Single Screen Format displays:
Reference: Unique Stock Code/Description/Supplier
Prices: Current Unit Cost/Current Unit Sale
Inputs: Units Bought & Value to date + number of Transactions
Outputs: Units Sold & Value to date + number of Transactions
Re-orders: Minimum Stock Level/Units to re-order & Value
Update: Balance & Value of Stock/Profit of Sales

Enter & Amend Reference/Prices/Minimum & Re-order levels.
Delete Record where no Stock remains.
Input & Output Stock as Transactions or Adjustments.
Recall last entries on Inputs & Outputs with process dates.
Browse through File 'window', retaining current record on view.
Find a Record by its Stock Code.
Display previous or following Record on File.
Print Record on view.
Compare last unit Cost & Sales Prices with Current preset Prices.
Update total Number of Lines, Stock Value, Inputs & Outputs.

Scan Reference fields by either order-of-input or sorted sequence.
Available to Screen or Printer are:
Re-order Stock Schedule: Stocks below preset Minimum levels.
Valuation of Stock in Hand: Balances carried forward.
Deletions: Reported by Reference only.
Output to Printer only:
Financial Report: Inputs & Outputs to date.
Current Prices - Unit Cost, Unit Sales & Margin.
Physical Stock Take Sheet: Space for 'actuals' & 'differences'.
Transactions Report: Inputs & Outputs for process date.

Rename File
Sort File by any Reference field.
Disk Directory/Format Data Disk
Printer - Line Feed & Controls
Decimal Placing for Units & Prices

Price

Disc. £34.95

DFM DATABASE
& Mail Labels.

Fully user definable Record Base
Create up to 15 Fields per Record
Define Field Headings Fields may be Alphanumeric (up to 36 characters)
Fields may be Numeric to 9 figures (zero 2 decimal places)
File Name may be changed at any time

Find Record by Key Field or (allocated number)
Amend Field Heading or Record Data
Calculate or Totalise on Numeric Fields
New Records may replicate from last Record viewed
Print or Delete Record on display
Move to Next or Last Record
Automatic Scroll forward through File (with Stop option)

Enter Details and Field selection for Search
Criteria may be specific or wild-card
Related numeric field information may be totalised
Specific Numeric Field Searches offer conditions
of less than/equal to/greater than (operands)
All Results may be output to Screen or Printer

Offers printed reports on selected Field
Full File Description is available for report planning
Field Totals will be output for any Numeric Fields
Define Label Print Format
Selectable Single Label Printing

Sorting may be performed by any Field type
New Key Field Index may be displayed

Utilities incude Memory Available & Disk Handling routines

Price ☐ C64 £19.95 ☐ C128 £24.95

Home Accounts Manager

HOME ACCOUNTS MANAGER is a comprehensive home management system designed to assist in the maintenance of any household budget. There are 4 major options from the main menu as follows:-

1. HOME ACCOUNTS Day to day expenses are entered and will be collated by the program to produce detailed expenditure reports to the screen or to a printer. Cheque payments are automatically posted to the bank account.

2. BANK ACCOUNT After entering details of your bank, branch and account number, you are able to enter all standard bank transactions, such as receiving payments, issuing cheques, setting up standing orders, entering bank charges, entering cash dispenser transactions and obtaining a bank statement to the screen or to a printer.

3. ADDRESS FILE You are able to enter up to 50 names, addresses and telephone numbers into a file which may then be sorted into aphabetical order, searched for particular names, scrolled in forward or reverse directions, or re-entered at a specific record number.

4. UTILITIES This option has a number of useful features plus full loans calculator for fast estimates of loan repayments.

Price ☐ C64 £19.95 ☐ C128 £24.95

VISA

"dialog...

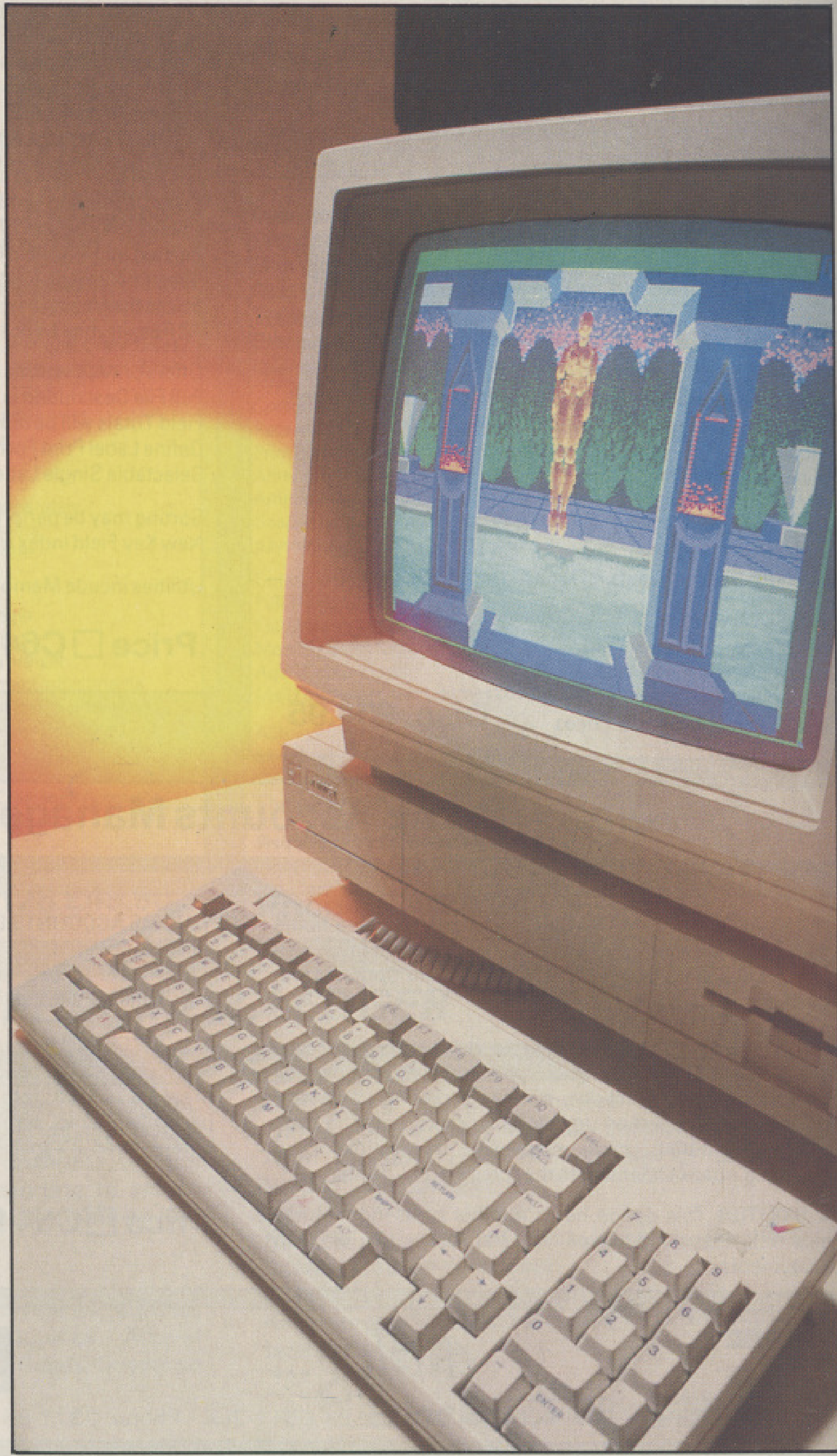
Access

DEBDEN GREEN SAFFRON WALDEN ESSEX CB11 3LX Phone: 0371 831009

C128 Software
Now available.
Phone
for
Details

Amiga Developments

The Amiga named Computer of the Year by the 'Observer' newspaper may be a marvellous machine, but its future success depends on the software available for Amiga buyers. So Commodore brought together key people from interested companies in an Amiga Software Development Conference held in Eastbourne on the south coast of England. Commodore Business Magazine reports on the conference.



The Story So Far.

America

When Commodore first announced that the Amiga would be the spearhead of their attack on the high-end home/low-end business market, not too many people knew much about the small Californian company that had designed the chips.

Within a year, Amiga was an industry buzz-word, Jack Tramiel was throwing law-suits about, and Commodore were the owners of the most impressive microcomputer ever.

However, it was not until the computer's specification was first leaked out that the technical people really started paying attention.

A computer with graphics capabilities normally associated with CAD workstations, sound synthesis of a quality unlike anything before, and perhaps most excitingly, true multi-tasking brought the Amiga instant recognition as the outstanding new computer of 1985.

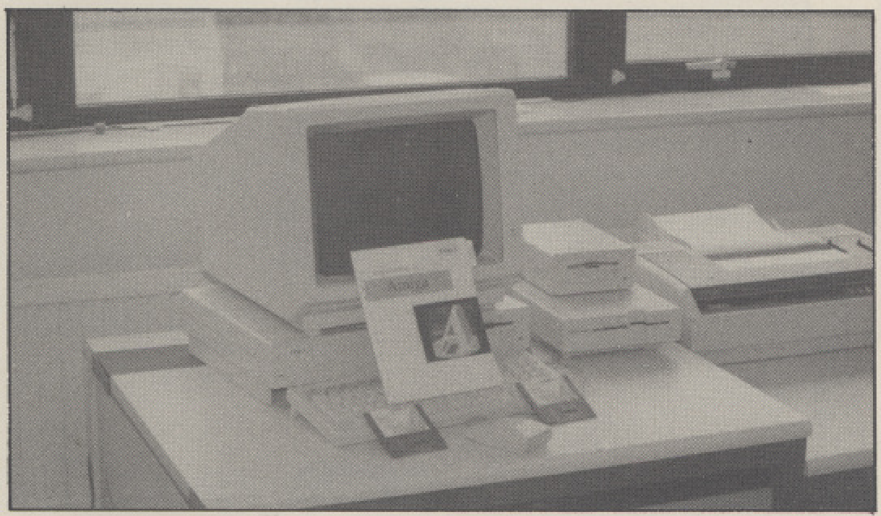
It was a long time in between these details being heard, and anyone actually seeing the machine, but when they did, all the normal terms for describing a computer went out the window in an attempt to do this product justice.

It was so well received because of two real factors. Firstly – and most importantly – it lived up to its pre-release hype. Secondly, Commodore had been far sighted enough to include the user friendly aspects of the Macintosh that were making Apple's machine such a success both at home and in business.

When it was launched in America, in May 1985, Commodore organised an enormous industry party to promote the Amiga. It was at this bash that the Amiga showed its true colours. Everyone who attended, to whom I have spoken, could do nothing but rave about the computer.

To show off the Amiga's true potential Commodore enlisted the help of 'celebrities' such as Andy Warhol, who admirably displayed the Amigas artistic talent (as well as some of his own) in exceptional original graphics.

To coincide with the arrival of pre-production Amigas for America, Commodore decided it would be a good idea to have a conference for all the developers of software and hardware to attend. This would give Commodore a chance to judge their reaction to the machine, and the developers a chance to ask the more technical questions that they otherwise might work around.



Held in Monterey, California, the conference was a great success – mainly due to the attendance of principal people behind the development of the machine, including the designer of the custom chips, Jay Minor.

From then on the machine took off in America, and Commodore was assured that these people were producing appropriate software for this outstanding machine.

UK

Europe and the UK are really way behind America as far as the Amiga's concerned. We cannot walk into any one of 600+ computer retailers and buy an Amiga for $1295, but don't be too upset. In some ways this should come as a relief, as I'll explain later.

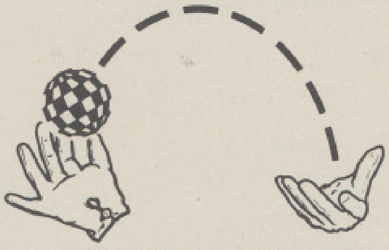
The Amiga's story in the Europe is much more one of waiting. Due to the fact that the machine is so outstanding, we heard about it quite a while ago, and many people were very excited at the prospect of its imminent arrival. This reached such a stage that I know some people who went to America to purchase them, rather than wait for Commodore any longer.

When it was first previewed in England, at a small press conference at Metacomco's offices in Bristol (the people who designed AmigaDOS), the machine astounded everbody with its multitasking abilities – but not much else.

The next showing – a press/industry affair at the PCW show – was much more complete, showing off the Amiga's graphics and sound brilliantly, and causing many an ohh and ahh from the crowd!

Publically however the Amiga had still not been shown! It is this, more than any other single factor, that has managed to build up such a level of frenzied excitement about the machine.

Shown for the first time at the Which Computer Show in January, the Amiga is still not finished for the European market, and I do not expect to see them on sale at least until March or April, perhaps later.



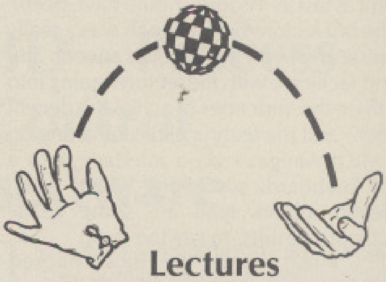
The Conference

In the UK, Commodore Electronics were the people who decided that we ought to have a Developers Conference similar to the one in Monterey. With more development packages being shipped everyday, there were, by this time, many people in Europe who had started, or were just about to start, writing or making things for the Amiga.

Although Eastbourne doesn't have the same ring as Monterey, the Conference was set for 1-4th of December 1985; and I duly booked my place and arrived early enough to have a good look around.

Gail Wellington, Head of Commodore Electronics in England, was the main Commodore person there, and it was she who gave us the statutary 'Welcome' speech and some of the introductions.

Proceedings really began in earnest on Monday with the first of a semmingly endless stream of lectures, some technical, some very technical. It was these lectures that formed the backbone of the conference.



Lectures

The lectures were all of a similar formula. A representative of Commodore or Amiga, depending on what the subject was, would give a talk – using demonstrations where necessary, and then a general question and answer session was opened at the end. With over 12 lectures crammed into three days, it was pretty hard work. All credit must go to the American Amiga representatives who really made the going much easier.

The first two lectures were pretty general. Gail Wellington spoke on how the Amiga was to be marketed in Europe, using examples from America to show where they intend to break into the business market, and in what quantities they expect the Amiga to move. She told us that they expect the Amiga to make 57% of its sales to Business Users, 28% to home users, and 15% to education.

John Baxter, Sales and Marketing Manager for Commodore Electronics, was next and he gave a lecture on the opportunities that the Amiga offered developers. Citing such piquantly unusual examples as: i) A funeral service management system.
ii) A golf swing analyser.
iii) A landscape gardening program.

As well as these he referred to the Hardware possibilities of the machine, as many developers are considering working on expansions for the machine.

There was then a brief Amiga demonstration showing all the old favourites such as the now statutory bouncing ball and Robot City. There were, however, some other interesting demonstrations which I will refer to later in my 'Software Summary'.

After lunch the technical stuff really began with a lecture on the Amiga System Architecture. This amounted to an in-depth look at the specification of the machine, with details on all the custom chips as well as the hardware configuaration and available peripherals.

Soon after this was the 'Introduction to Hardware' lecture. In a simple way, the lecturer, who was head of hardware development of Amiga, explained the ins and outs of the Amiga's hardware functions. The architecture of the chips was also discussed and their final (?) names were given. They are: Agnus, Denise and Paula.

The next day saw a really complicated lecture on the System Kernal, followed by a lecture from Tim King (the Englishman who wrote AmigaDOS) on its more invoved aspects – though he did seem to spend much of his time being asked why the DOS wasn't as fast as it could/should have been!

The last lecture before lunch was a really interesting one on the Amiga's speech and sound facilities, with the lecturer going into depth on the intricaries of achieving decent speech, and the technicalities of wiring up the MIDI Amiga – via a interface – to a MIDI keyboard, something which when achieved could lead to some really spectacular results, to say the least!

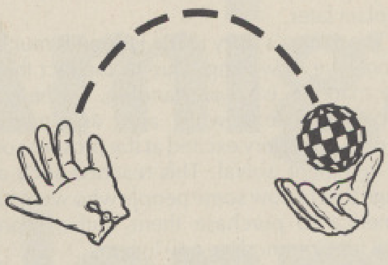
After lunch came the most packed lecture of the whole three days. Dale Luck (a very likeable young man, who is an absolute genius when it comes to graphics on the Amiga – and so he should be as he helped write the systems software) gave a lecture on graphics. He went into great depth on the 'Blitter Object', which is basically the Amiga's most amazing graphical function – allowing you to create some really stunning animation.

As well as talking about these, he showed us some excellent three dimensional rotation demos which showed how powerful and easy to program the Amiga can be – when you know what you're doing!

Intuition, the software interface that the average user of the Amiga will see (and that the programmer will have to know an awful lot about) was the last and funniest lecture of the day. Intuition is the part of the Amiga that provides pull-down menus, gadgets, requesters and alerts – in al 'better-than Mac' way, and this lecture discussed how these could be used to full advantage.

By Wednesday, the last day of the conference, most people had spent quite a while using any one of the Amigas that sat in reception throughout the conference and all of us had become much more convinced by Commodores commitment than we had expected. The last morning consisted of another lecture on Intution followed by an excellent one on the Workbench, which is bascially the utility that allows you to make the most of the Amiga.

Before we all went home, there were a series of workshops, with each person attending the one he saw as most important to himself. I'd love to tell you about all of them, but I went to the graphics one and watched Dale show us some of the amazing tricks he has learnt, including how to create sixteen colour pointers of Garfield!



Software Summary

Perhaps the most important pieces of software at the conference were the new 1.1 versions of the Kickstart and Workbench disks. These versions will have hopefully cured some of the earlier problems. The kickstart provides no visible differences, but the workbench provides such exciting new additions as a calculator, and a really nice Icon Editor.

On the leisure/entertainments side there were quite a few exciting products around. Commodore gave us a brief look at a game they will be releasing called 'Wynd Walker'. Although the actual game doesn't look vastly amazing, the sound was totally awesome. When this one comes out it really should be worth it! Also shown was Commodore's range of low-level business utility programs: Musicraft, Graphicraft, and Textcraft.

Electronic Arts, whose VP of Development Tim Mott was at the conference, showed a truly incredible paint program, suitably named Deluxe Paint. This has produced some of the most amazing graphics you have or will ever see on a micro! If you watched the Micro-Live programme featuring the Amiga, you would have seen a brief demonstration of this truly incredibly program.

Also floating around was a version of Activision's Harker for the Amiga, with some lovely views of famous towns making it a really worthy program.

Summary

Overall the conference showed one thing. There are many people who are putting a lot behind the Amiga, not least Commodore themselves. They want it to be a success and are doing their best to see it is, as are the developers. I truly hope it's a sucess. It certainly deserves to be!

Francis Jago

Custom Animation Chip

- Bit Blitter – uses hardware to move display data
  - allows high speed animation
  - frees the CPU for other concurrent tasks
- Display synchronized coprocessor
- Controls 25 DMA (Direct Memory Access) Channels
  - allows the disk and sound to operate with minimal CPU intervention

Custom Graphics Chip

- Many different resolutions
  - 320 X 200 up to 640 X 400
- 4096 colours on a TV or RGB monitor
- Eight re-usable sprite controllers
- 60, 80 Column coloured text
- Same software for all TV's and monitors

Custom Sound/Peripherals Chip

- Four voices of sound output configured as two stereo channels
- Nine Octaves
- Complex waveforms
- Uses both amplitude and frequency modulation
- I/O controls for
  - disk data
  - joystick controller ports
- Microdisk Controller
- Interrupt Control System

Hardware Configuration

- Built-in 3.5" DS/DD FDD
  - 880K formatted capacity
- Detached keyboard
  - 89 keys
  - numeric keypad
  - cursor keys
- 2-button mouse
- External floppy disk port
- Parallel port – centronics compatible
- Serial port – RS232C
- Stereo audio – RCA phone jacks
- TV and RGB interface
- Expansion RAM
- Expansion interface

Hardware Features

- 68000 Microprocessor
  - 7.2 MHz clock speed
  - 16 – bit data bus
- 256K Bytes RAM
  - user expandable to 512K Bytes
  - configurable to 8M Bytes
- 256K Bytes Write Protected RAM
- 3 Custom VLSI Chip
  - Animation Chip
  - Graphics Chip
  - Sound/Peripherals Chip

Amiga Software

Y2 – Communications Software

"The Amiga makes it difficult to produce a finished product, because it is so easy to keep adding different touches," says Rob Eva of Y2.

Y2 are in the process of developing terminal software for the Amiga. Their first package, which is anticipated to be shown at Which, is a Prestel terminal.

Eva says: "At Which we plan to have a phone line and modem showing the Prestel database. By that time the product should be suitably demonstratable."

He continues: "The sheer speed of the Amiga makes what we are doing so much better. No other machine has ever offered this speed."

Y2 also plan other terminal software including EPAD to access Telecom Gold.

Further plans for the Amiga include a package for bore hole inspection utilising the Gemlock device, the feature which mixes graphics and pictures.

3D – Process Control software

The Amiga becomes the equivalent of the human operator with software being developed by 3D.

Think Lab is a processor-based system which allows the computer to monitor signals from temperature and humidity sensors. The computer can then take control of external forces in industrial plants.

3D's Kr Kibasi says: "Applications in the process control industry require a multi-tasking facility which is, of course, built into the Amiga.

"We are hoping to bring out a number of products compatible with the Amiga processor for industrial, design, medical and educational purposes."

3D have systems running on other Commodore machines including the PC10, but none are as powerful as the Amiga version.

"It is a very good machine," says Kabasi. "We are trying to convert all our software and hardware to this machine.

"We have only had the Amiga here for four weeks, but we've already used it for 400 hours and people are queing to use it!"

Software houses reveal their plans for the development of software for the Amiga.

Taurus Impex – Integrated Business Software

Taurus are developing an integrated package of a spreadsheet, word processor and database for Amiga.

"It's designed to be all things to all people," says Peter Molineaux. "We have got a version for the IBM PC which is similar to Symphony. The Amiga meant a total rewrite to take advantage of the window functions and pull down menus".

Going under a working title of Cluster, the package is designed to be user-friendly.

Molineaux says: "If you are a manager with no interest in programming you just want to produce a screen that will become a database.

"The nice thing is that within the database you can have fields that are spreadsheets".

Another feature of this package is the facility to produce a program in either Pascal C or Basic which enables a programmer to modify the package.

Molineaux says: "The Amiga is a super machine. It is very fast, which is great for development, but the disk drive is still slow."

Cygnet – Publishing software

Front Desk is the name given to the publishing package under development by Cygnet. Three versions will eventually be available: amateur (up to A4), semi-professional (up to A3) and professional (up to A1).

The amateur series will be the first to be completed. It comprises four packages, all multi-tasking and concurrent: Front Desk, Font Editor, Laeser Drivers and Illustration.

Every aspect of page production is covered. To create text, there is a library of 32 fonts supplied while the Font Editor allows you to edit or create your own fonts.

Front desk is fully compatible with packages such as Textcraft, Wordcraft, dBase II and III, and Delux Paint.

A vast variety of graphics and technical drawings can be produced. These can be expanded, reduced, moved, flipped, rotated, etc.

The Laser Driver allows you print out on a selection of printers including Hewlett Packard, Canon, Apple and Epson.

Cygnet's Jay Savoor says: "The amateur series is aimed at the home market; semi-professional at small printers and the Prontaprints of this world; and the professional at publishing houses.

"There are other typesetting packages available," he continues. "But none are as flexible. Without a machine like the Amiga it would not have been possible."

The Printing World

What is happening and what is going to happen to the vital and fast changing world of printers? A leading manufacturer and a top distributer tell Commodore Business Magazine – and you – how they see the future.

Mannesmann Tally are part of the Mannesmann Group – a large German conglomerate with interests in heavy industrial material handling, but with an expanding interest into high technology areas.

At the end of the '70s Mannesmann bought Tally. The whole group became Mannesmann Tally and is run from a head office in Germany. There are three factories, in America, Vienna and Germany, plus subsidiaries in Austria, France, Italy and the UK.

UK Managing Director, David Archard, explains: "In every other country we have outlets which we view as distributors. If, for example, you want to buy a Mannesmann Tally printer in Finland, we have a distributor in Finland.

"We are the largest European manufacturers of printers."

Archard says that it is only recently that printer manufacturers have considered setting up assembly plants in the UK, and that is mainly due to the exchange rates.

"We have been in the printer business since the beginning of the '70s," says Archard. "We were responsible for the first line matrix printer, a product which was extremely successful.

"We licensed our technology to Hewlett Packard in the '70s and they have now built on that."

Mannesmann Tally use distributors in two ways. There are distributors in various countries.

"As a representative of Mannesmann Tally, they are expected to provide a full after sales service," says Archard.

"If you like, we could almost call them a mini-subsidiary in the way we view their responsibility."

In the UK, Mannesmann Tally have a policy of selling to the trade. Generally the end user market is not one of the company will deal with directly.

Archard says: "We supply small computer dealers directly – we call this Mannesmann Tally Direct."

Mannesmann Tally place great emphasis on supporting the customer. "We have a reputation to keep," says Archard. "We will never be the cheapest supplier, but anyone buying our products will get a superior product and superior service."

Over the last few years, certain trends have emerged in the printer market.

Mannesmann Tally have noticed that customers have become less prepared to make commitments.

"I think people now understand that the market is volatile," says Archard. "Unfortunately a lot of people think that the fall down in the States is going to happen over here."

In response to this trend, Mannesmann Tally is beginning to provide a similar service to dealers in that orders are placed and received the next day in some circumstances.

"It's a very competitive market," says Archard. "People are having to work harder to get business."

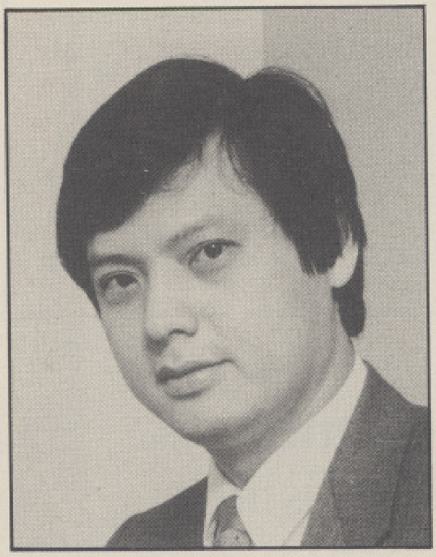
This has resulted in another trend, that of special offers.

Archard says: "We have to at least have a competitive product offering, not only in terms of performance, but in pricing.

"We have found that we have had to become more active in terms of promoting our products. Our range of products is probably the widest around, ranging from 100cps printers up to 900 lines per minute.

"Mannesmann Tally have been watching the non-impact printer market very closely and we can expect an announcement of a product such as a laser printer in early spring.

"We have a number of new products on starting blocks for this year," says Archard. "We will be launching both impact and non-impact models."



As distributors of printers, DDL do not recommend one printer over all others. They offer a range covering the whole spectrum of user requirements from the small home user to the business user. When a dealer contacts them, they listen to the end user's requirements before suggesting any particular printer.

Managing Director, Jeff Yong comments on recent developments in the printer market: "We have seen the emergence of new technology such as the laser printer," he says. "Although a lot of people are pulling back on the laser market. Information I have received from Japan is that the market worldwide is not as large as anticipated in order to make it economical.

"What you are going to see is a lot of manufacturers all having a small chunk of the market. I believe many people will pull back from laser printers."

Meanwhile Yong says that the dot matrix printer has established a firmer footing.

"People were saying that dot matrix printers had seen their days," he says. "However NLQ technology has really brought the dot matrix back into the forefront."

Colour printers have still only a limited demand, a fact Yong believes relates to the limited number of software packages utilising colour.

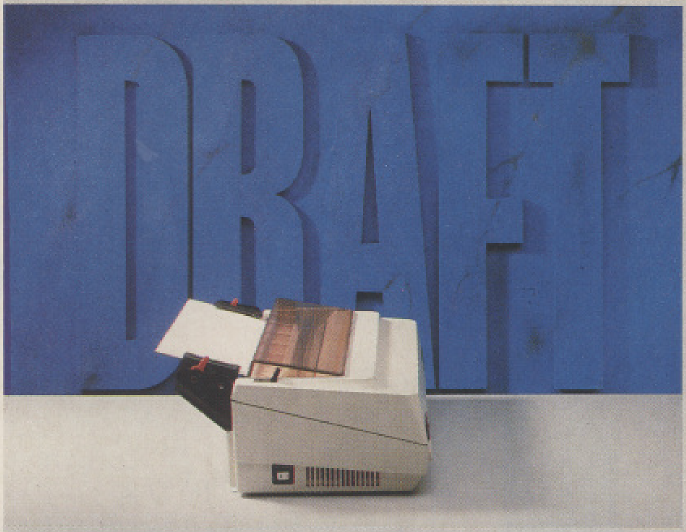
He says: "At the moment there isn't the demand. It is more costly because of the cost of the ribbon and the number of times a user requires colour. I don't think it will be long until colour printers come into acceptance, though."

According to Yong, we will soon see the demise of small printer manufacturers in the same way that we saw many small software houses going out of business.

He says: "All the smaller manufacturers coming out with yesterday's printers at half the cost will go out of business. We shall end up with just the big names manufacturing printers."

Experience prompts Yong to believe that the quality of a product bears no relation to the cooperation received from the manufacturers themselves. He makes a plea for more technical support, more promotion, and a closer working relationship. "It's beginning to happen, but we still have a long way to go."

Three ways to look at the new MT290 printer



CORRESPONDENCE

Whichever way you look at it, the new MT290 is a remarkable matrix printer. You'll find the answers to all your printing requirements in this one machine.

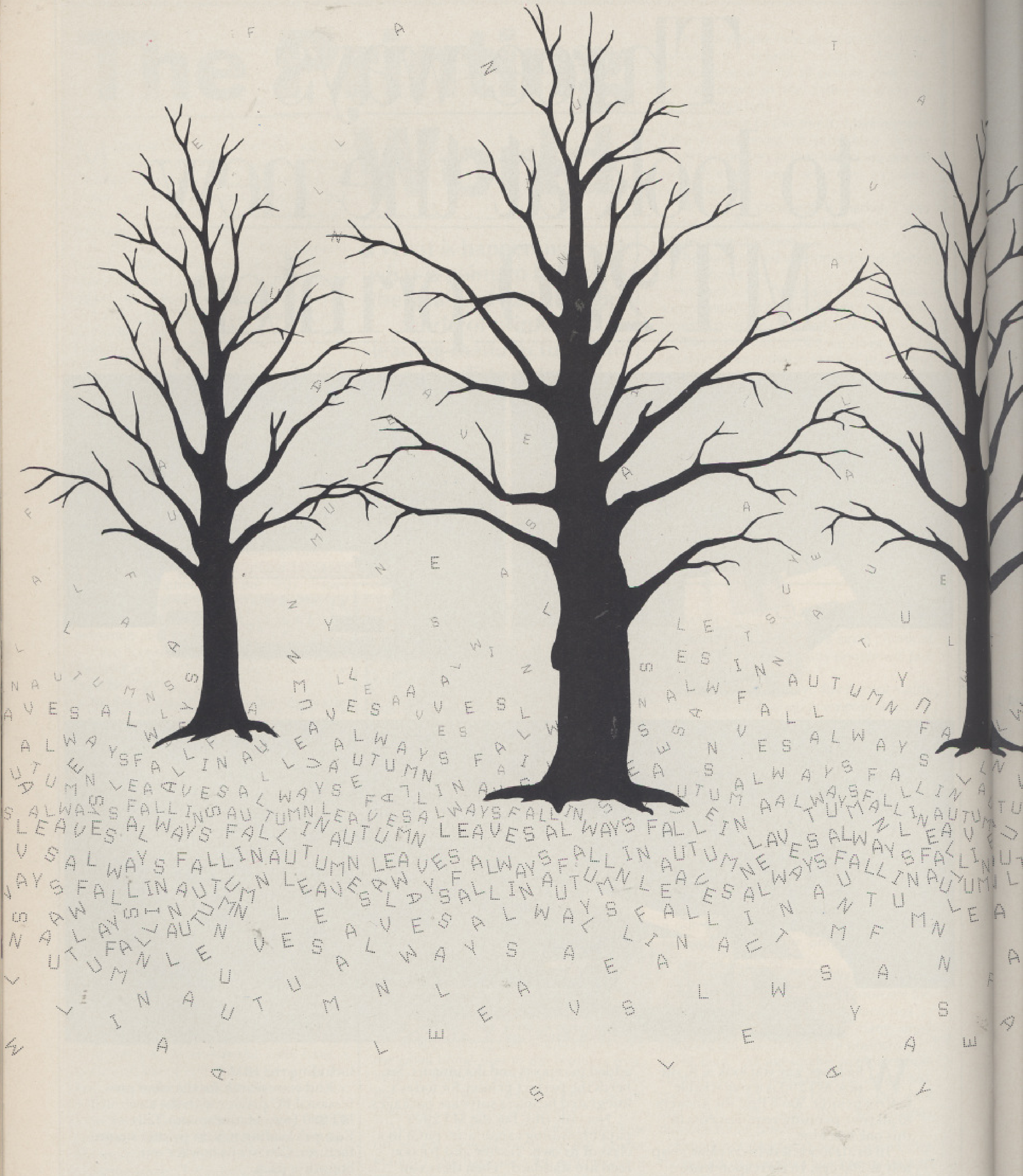
In draft mode it delivers clear, crisp text at 200 cps. In correspondence mode it generates high "letter" quality print at 50 cps. A variety of typestyles using optional plug-in font cartridges are also available. While the graphics mode allows a visual dimension to be added to reports and documents. So, here's the perfect printer for today's integrated business software packages.

Not only this, but the MT290's paper handling capabilities put it in a class of its own. Tractor and friction feed are standard. Then there's an optional twin tray sheet feeder for multi-page documents and an auto front feed for demand printing. The MT290 is both hardware and software compatible with most popular micros including the IBM PC.

End your search for the ideal professional PC printer with the new MT290 from Mannesmann Tally – Europe's leading matrix printer manufacturer. Contact us now for our literature pack.

MANNESMANN
TALLY

☎ **24 HOUR PERSONALLY ANSWERED FREEPHONE 0800 400 402.** MANNESMANN TALLY LIMITED, MOLLY MILLARS LANE, WOKINGHAM, BERKSHIRE RG11 2QT



LEAVES ALWAYS FALL IN AUTUMN

Four fast and easy to use printers.

160cps draft/40cps correspondence quality.
200cps draft/50cps correspondence quality.
80 and 136 column widths.

Industry standard compatibility.

Full bit image graphics.

LEAVES ALWAYS FALL IN AUTUMN

Full two-year
warranty.

For full details ring
Citizen Printers on 01-200 0200
(24 hrs a day, 7 days a week).

CITIZEN
COMPUTER PRINTERS

There are some things you can always depend on.

Rockfort Disk Storage System

M.D. 12/30 Micro Disk Box
Holds 12 to 30 — 3½″ Disks according to thickness
£7.85
Incl. VAT, Post & Packing

M.F. 50 Floppy Disk Box
Holds 50 — 5¼″ Disks
£9.50
Incl. VAT, Post & Packing

M.F. 10 Floppy Disk Box
Holds 10 — 5¼″ Disks
£2.75
Incl. VAT, Post & Packing

Rockfort Diskfile range of products not only offer an easy reference and attractive disk filing system but also offer complete protection from damaging dust particles.

BLANK LABEL 5¼″ FLOPPY DISKS . . . FULLY CERTIFIED

100% GUARANTEED

PRODUCT CODE	1 BOX	2-4	5-9	10+
SS/DD — 48tpi	13.95	13.30	12.35	11.40
DS/DD — 48tpi	17.10	16.50	15.45	14.40
SS/DD — 96tpi	18.00	17.45	16.45	15.40
DS/DD — 96tpi	19.10	18.40	17.45	16.20

- ALL BLANK LABEL DISKS SUPPLIED WITH ENVELOPE, WRITE PROTECT AND INDICATOR LABELS.
- EACH BOX CONTAINS 10 DISKS. THE BOX IS ROCKFORT PRODUCTS M.F. 10 STORAGE BOX.
- ABOVE MENTIONED PRICES INCLUDE M.F. 10 BOX, P&P AND VAT.

TRADE ENQUIRIES INVITED

ROCKFORT PRODUCTS — 81 Church Road, London NW4 4DP. Tel: 01-203 0191. Telex: 946240. Answer back: CWEASYG, ref. 19012450.

CODE NO.	DESCRIPTION	QTY.	PRICE £ p
M.F. 10	5¼″ DISK BOX		
M.F. 50	5¼″ DISK BOX		
M.D. 12/30	MICRO DISK BOX		
3M 5012	SS/SD 48tpi		
3M 5022	DS/DD 48tpi		
B1 5014	SS/DD 96tpi		
BM 5024	DS/DD 96tpi		
		TOTAL	

PLEASE FORWARD PRODUCTS AS INDICATED ABOVE. I ENCLOSE CHEQUE VALUE £________

NAME________

ADDRESS________

____

POSTCODE________

NLQ Printers

Francis Jago evaluates a selection of near letter quality printers compatible with Commodore's PC10 and PC20

Mannesmann Tally MT290

One of the easiet printers to comé to terms with in this round-up was the MT290. With a built in Centronics and optional Serial, the printer should theorectically interface to anything.

The tractor-feed, a small (ish) addition to the back proved easy to load and, more importantly, it behaved impeccably throughout the tests.

Neatly housed in a beige case, the MT is very easy to use, the six buttons on the front providing all the functions you could need, including a very simple ON/OFF system for the NLQ.

The only real criticism I would venture to level at the 290 is purely one of taste – I don't like those oversquare typefaces, they have been adopted by printer companies as they seem to think it shows a high-tech image. They really ought to stick to the more usual fonts – which are available, but you must pay. Apart from that it's a good, fast (200 cps draft, 50cps NLQ), high quality printer.

Price: £699
Print Quality: ★★★
Value for Money: ★★★★
Overall: ★★★★
Contact: Mannesmann Tally Ltd, Moly Millars Lane, Wokingham, Berks RG11 2QT. Tel:0734 788711.

NEC Pinwriter P2

The one feature which really endeared me to this NEC printer was the ease with which you can change from one print font to another. Having different fonts built-in is a rare feature, but the NEC – with its easy to use LEDs – makes it easy to get the most out of the really pretty NLQ fonts.

Being mid-priced, the NEC has quite a few features you wouldn't really expect, but it also lacks features that some businessmen may view essential such as a tractor feed, which is an optional extra.

Overall a good printer, and if you need a variety of typefaces and fonts it could prove a real assett.

Price: £455 + VAT
Print Quality: ★★★★ (especially fonts)
Value for Money: ★★★
Overall: ★★★
Contact: NEC Business Systems, 35 Oval Road, London NW1 7EA. Tel: 01-267 7000.

Olivetti DM 280/1

This is Olivetti's attempt to make an indentation into the Epson dominated low-end business market. The DM 280 has all the functions of the FX-80, but unlike the FX-80 our review model also had a host of problems!

Amazingly Olivetti's manual seemed almost totally unsuited to the machine – even to the extent that, when setting up to the machine to run on the PC, the recommended dip-switch settings were wrong!

More problems occured when using the tractor feed. Although neat enough to look at, it has the unacceptable tendancy to chew up the paper, something it did in fact more often than not.

Even the print quality was not that special, with a tendency to fade and have graduated grey. At first I blamed this on the ribbon, but it was the same with a new one, so it must be a printing fault.

Overall, not a printer I would recommend, however inexpensive it is.

Price: £390
Print Quality: ★★
Value for Money: ★
Overall: ★
Contact: Olivetti Peripheral Equipment, Olivetti House, 86/88 Upper Richmond Road, London SW15 2UR. Tel:01-785 6666.

Fujitsu DL2400

To review a colour printer with the PC is not something that normally occurs. By this I mean that there can't be too many Commodore PC owners out there who could take full advantage of the Fujitsu's facilities.

As an expensive dot-matrix printer, the Fujitsu stands out above the crowd any way. Although it may not be the fastest of all the printers in its price range, the print quality is very good, and the extra font cartridges – easily fitted to the front of the machine – allow for a wide variety of different texts.

The graphical capabilities of this printer, especially using the colour cartridge are very impressive. As it allows you to choose between a wide variety of protocols (Epson JX80, Epson FX80, as well as the IBM Range) you should be able to dump any graphics from a wide variety of programs.

If you need a colour printer, or if you can justify this price for an all purpose dot matrix, then I must recommend the Fujitsu – its only failing is that it's a bit fiddly!

Price: £1110
Print Quality: ★★★★
Value for Money: ★★★
Overall: ★★★★
Contact: Fujitsu, 54 Jermyn Street, London SW1Y 6NQ. Tel: 01-408 0043.

Samleco SX86

This is the cheapest in the Samleco range of NLQ printers and, as such, must be one of the cheapest NLQ printers about. It prints at the very respectable speed of 120 cps draft, with an NLQ speed of somewhere around 25-30 cps.

To be honest, I think the Samleco fits better in the low end of the PC market. It is ideal for the businessman who uses a daisywheel or high quality printer at work, but needs a good, cheap and reliable printer for home, plus a good NLQ mode if needed. Available with either a Centronics or Serial Interface, the Samleco came out well in our test, though the ribbon was a nightmare to fit!

At a price like this I cannot see the Samleco failing. It goes head on at the more well-known names with an equally good product for less – watch out Epson !

Price: £229 + VAT
Print Quality: ★★★
Value for money: ★★★★
Overall: ★★★
Contact: Samleco Computer Services Ltd, SCS House, 9 Fairacres Industrial Estate, Dedworth Road, Windsor, Berks SL4 4LE. Tel: 07535 54717/8/9.

Citizen MSP-10

Citizen, a new name in printers – at least as far as the U.K is concerned – have decided now is the time to release their wide range of Epson/IBM compatible NLQ printers.

The MSP-10, a printer in direct competition with Epson's much favoured FX-80, is a extremely neat looking package (in fact it must be one of the thinnest printers I have ever seen!). With speeds of 160cps draft quality and 40cps NLQ, it is again directly compatible with the Epson, and the NLQ is really very crisply formed indeed.

Overall the Citizen is a very nice printer, my only real criticism is the noise level – which did seem excessive. For someone looking for this type of printer I think the Citizen makes a very sensible choice.

Price: £395 + VAT
Print Quality: ★★★
Value for money: ★★★
Overall: ★★★★
Contact: Citizen Europe Ltd, Wellington House, 4/10 Cowley Road, Uxbridge, Middlesex UB8 2XW. Tel:0895 72621.

PC — compatible Printers

Continuing our list of printers compatible with the Commodore PCs.

Product	Features	Price	Company
Taxan KP810PC+	80 print. 136 col. 10ch/p/inch	£499	DDL
Taxan KP910PC+	160 cps dr. 27 NLQ, wide carriage, 10 ch/p/inch	£399	DDL
Colourjet 132	36 colour, 16 colours, low resolution mode	£569	Intergrex
Matrix DX86	120 cps, directional 132col. 136 condensed print. 18" x 18". NLQ 96 char.	£219	Samleco
Matrix DX85	80 col. directional	£219	Samleco
Matrix 136	132 col. 224 print	£329	Samleco
Printstar 5025	24 pin high duty cycle. 200 cps draft 100 NLQ skip function – high through – put.	£1250	Nissei-Sangyo
Microline 192	80 col 160 cps 55 draft clean hand ribbon cartridge.	£399	X-Data
KX/P1091	80 col. 120 cps draft 24 cps NLQ	£285	Panasonic
KX/P1092	80 col. 180 cps draft 28 cps NLQ	£395	Panasonic
KX/P1592	136 col. 180 cps dr. 28 cps NLQ	£495	Panasonic
KX/P3151	132 col. daisy wheel 22 cps print speed	£595	Panasonic
F/X85	100 cps dr. 80 col.	£438	Epson
L/X80	100 cps dr. 80 col.	£255	Epson
L/X1500	24 pin head. Faster 680 cps	32K buff £1025 2K buff £995	Epson
SQ2000	inkjet printer 132 col Quieter..	32K buff £1925 2K buff £1825	Epson
DM280/1 /2	centronics dual 80 col 160/35 cps single manual feed	£390 £440	Olivetti
DM290/1 centronics /2 dual interface	132 col tractor feed standard	£485 £540	Olivetti
DM285/1 centronics /2 dual interface	80 col tractor feed standard.	£475 £525	Olivetti
DM295/1 centronics /2 dual interface	80 col tractor feed	£590 £640	Olivetti

Product	Features	Price	Company
DM5305	132 col 300 cps 300/120 NLQ	£1143	Olivetti
DM580	132 col 192 dr. 48 NLQ	£1189	Olivetti
Sprint 12/20	Single sheet feeder fixed interface	£549	Qume
Sprint 11	changeable interface. sheet feeders & tractors optional.	£2800	Qume
MSP/10	80 col 160 cps 40 NLQ	£395	Citizen
MSP/15	132 col. 160 cps 40 NLQ	£500	Citizen
MSP/20	80 col 160 cps 40 NLQ	£395	Citizen
MSP/25	80 col. 200 ch/p/sec 50 NLQ	£700	Citizen
1200	120 ch/p/sec 25 NLQ 80 col.	£235	Citizen
DL2400	24 dot low noise auto. cut sheet 180 cps dr. 60 cps NLQ 7 colours	£1110	Fujitsu
DX2100	half size 80 col.	£560	Fujitsu
DX2200	9 dot 220 cps dr. 44 cps NLQ 136 col.	£690	Fujitsu
Seikosha BP5420Ai	18K buffer 420 ch. 106 NLQ 132 col 10" per sec	£1595	DDL
Seikosha BP5420i	parallel only 4K buffer	£1495	DDL
Seikosha BP5200i	206 ch/p/sec 103 NLQ parallel only 3" p/sec 4K buffer	£1095	DDL
Seikosha SP800i	80 col 80 cps 20 NLQ	£249	DDL
Microline 193	132 col. switchable memory.	£549	X-Data
Microline 84	200 cps 132 col.	£898	X-Data
Pinwriter P2	80 col. 180 draft 35 NLQ	£455	NEC
Pinwriter P3	136 col. 35 NLQ 18 pin print	£609	NEC
Pinwriter P5	24 pin 264 draft 88 NLQ	£984	NEC
MT85	Quiet. 80 col. 180 cps	£369	Mannesmann Tally
MT86	136 col. 45 correspondant mode.	£469	Mannesmann Tally
MT290	Professional printer. 200 cps draft. 50 cps NLQ	£699	Mannesmann Tally
HR5	Bi-directional 80 col. 16 cps	£110	Brother
M1009	80 col tractor feed 50 cps	£154	Brother
M1109	Centronics 50 cps bi-directional	£152	Brother
1509	180 cps 136 col.	£495	Brother
20204L	160 cps draft 96 cps NLQ	£995	Brother

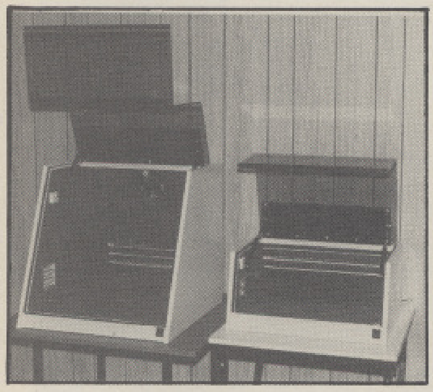
Printer Silencers

Printers are noisy, and this excess noise not only results in disruption and discomfort for office personnel but also a decrease in overall efficiency. Printer Silencers comes in all shapes and sizes as you will see from our pictorial guide.

T Mat (Tel: 0509 217171)

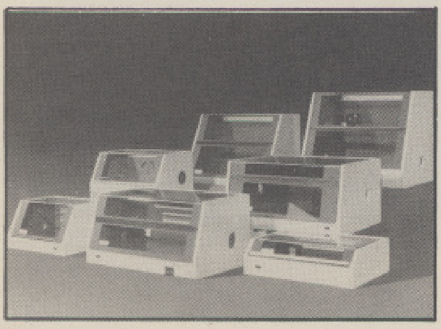
Noise control specialists T Mat Engineering produce the Ventguard range of acoustic covers. It covers most printers on the market and T Mat claim a noise reduction of 90-95%. All covers are fully specified and approved by HMSO for use in goverment departments.

The range is being extended this year to cover the mini-printer range.



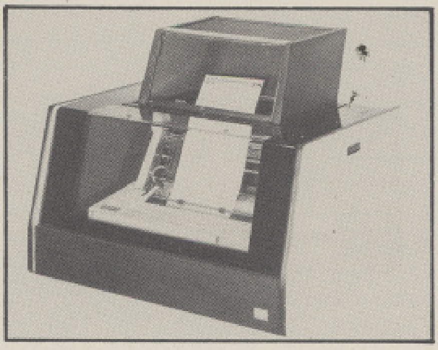
Quiet Print Europe (Tel: 021-550 1827)

Quiet Print Printer Silencers provide up to 90% noise reduction. Constructed of acrylic and wood, high density foam linings enhance acoustic performance. For protection, the printer cannot be turned on without activating the Whisper fan provided.



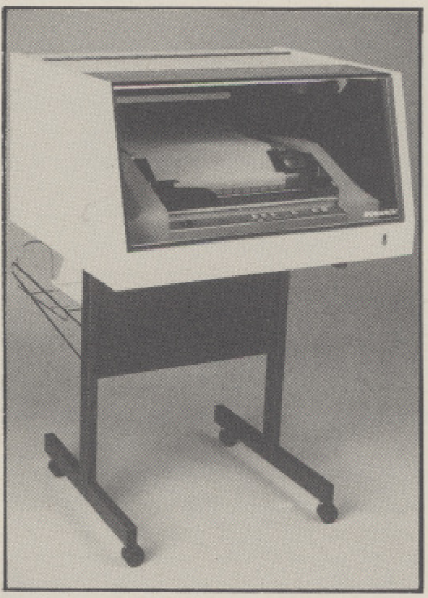
Fernhill Equipment (Tel: 0276 20010)

Fernhill's range of silencers reduce noise by around 85%, They fit all formstractors and sheetfeeders with a model to fit most printers.



Monarch Acoustics (Tel: 06077 6606)

Monarch Acoustics offer a range of acoustic covers to accomodate printers ranging from the micro's up to the daisy wheel with sheet feeder. Fitted with electric fans for cooling the printer, Monarch's silencers offer noise reduction of 14-20 dBA.

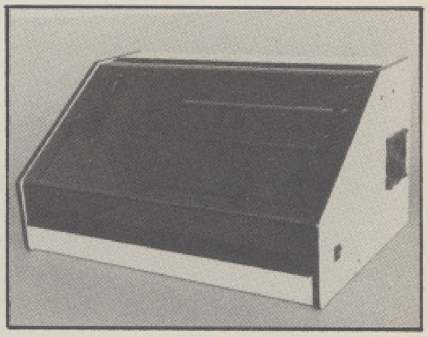


Primatel (Tel: 01-679 4428)

All-British Primatel offer a range of printer silencers which reduce noise by 90+%. All covers are fitted with a silent running cooling fan and have two slots in the back panel for paper feed. Primatel also supply the following accessories: 13 amp switched socket; appliance socket and lead; printer stand and paper basket; and work stations.

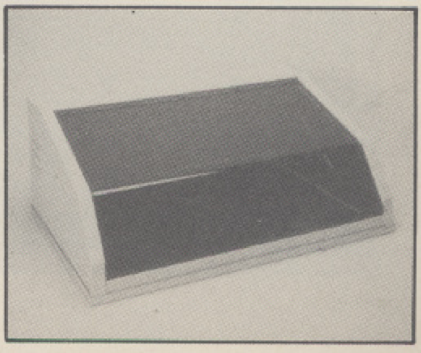
LMF (Tel: 0909 482594)

LMF claim that their silencers reduce printer noise to a whisper. A silent ventilation fan supplies cool air, while a metal adjustable rear paper slot ensures correct running height of continuous stationary. The range caters for the majority of printers.



Lynnem (Tel: 04446 3377-6632)

Lynnem have 15 years of specialist experience in the design and manufacture of Acoustic Enclosures. Approved by British Telecom and Mannesmann Tally, among others, Lynnem have now added a solid mahogany enclosure to its range of steel and wooden laminate acoustic enclosures.



PC MOUSE

POINTS YOU IN THE RIGHT DIRECTION

AND LOTS MORE

Mouse Systems Optical PC Mouse
Exclusive UK Distributor
Data Design Techniques Ltd.
Unit 16B, Norman Way
Severn Bridge Industrial Estate
Portskewett, Newport, Gwent NP6 4YU.
Phone: 0291 423781
Telex No. 497576 FAX 0291425442

COMMOD

Don't miss out!

With the growing popularity of Commodore Computing International Magazine, newsagents and bookstalls sell out quickly. More and more frustrated readers wanting the one magazine every Commodore owner needs are finding they are missing out and some months having to do without the latest news, reviews and vital feature articles and programs.

The popular solution is to place an order for your Commodore Computing International Magazine with your newsagent or by direct subscription to us.

A subscription means you get the magazine delivered to your door. It saves you time and makes sure you don't lose out on what's happening in the Commodore world.

Send in the subscription coupon below and get the best Commodore magazine the easy way — through your letterbox. Don't miss out on the best, mail the coupon **now**.

(If you don't want to cut up the magazine, we're happy to have a photocopy of the coupon or a request on plain paper.)

Commodore — Subscription Order Form

To Subscriptions Manager, Commodore Computing International,
40 Bowling Green Lane, London EC1R 0NE. Tel: 01-278 0333 Telex: 267247 FINSEC

Please send me 12 issues of *Commodore Computing International*

☐ Cheque enclosed

☐ Please debit my Access

Card No. ________________

☐ Subscription rate U.K. £15.00

☐ Europe £20.00

☐ Outside Europe £28.50

Expiry date: ________________

Cheques should be made payable to:
CROFTWARD LIMITED

Name ________________

Address ________________

____

County ________________ Post Code ________________

Telephone (home) ________________ (business) ________________

Signed ________________ Date (Subscription to commence) ________________

Seikosha. Advanced business printers for every size of business.

Whether you're in business in a small way or running a vast Multinational, you need the most advanced, reliable, high performance printer you can buy.

And that means Seikosha.

Because Seikosha produce a range of up-to-the-minute printers to suit everyone, from the smallest to the largest volume business user.

What all Seikosha printers share in common however, is an unbeatable combination of high speeds, superb quality printing (including NLQ), low noise levels and the most advanced multi-function features you'll find today.

Of course this is no more than you would expect from the "House of Seiko".

Take the BP 5420 for example.

Fast, quiet and designed for heavy duty use, it combines high speed quality print at 420 cps (draft) and 104 cps (NLQ) with an 18K buffer. For ease of operation all user controls, plus the selector switch for the 8 built-in fonts, are located on the front panel of the printer. Parallel and serial interfaces are standard.

Then, exclusively for the IBM PC and compatibles are the BP 5420I and BP 5200I.

The BP 5420I combines most of the features of the BP 5420 printer with all IBM characters, symbols and graphics as standard. The BP 5200I operates at 206 cps (draft) and 103 cps (NLQ) and represents one of the best value printers of its kind on the market.

Finally, the compact SP NLQ printer series meets the needs of smaller businesses.

Available from all leading computer dealers. Distributed exclusively by DDL. For details of your nearest stockists contact:

DDL

5 King's Ride Park,
Ascot, Berks. SL5 8BP
Tel: 0990 28921
Telex: 846303 DD LTD G.

THE NEW FORCE IN DISTRIBUTION

10 MILLION YOU
CAN COUNT ON
BORSU
THE BANKER
BusinessWeek

The BORSU 10+ exchangeable hard disc-drive with a minimum storage capacity of 10 million bytes.

THE BORSU 10+ interchangeable 20mb sub-system is solving the problem of many PC compatible users. It offers a unique combination of speed and high volume storage normally associated with hard disks with all the flexibility of floppy disks.

BORSU 10+ provides you with interchangeability, unlimited storage, fast back-up, reliability, security with ease of use. GIVE IT A TRY.

You can test these claims for yourself as BORSU INTERNATIONAL Ltd. will put this sub-system at your disposal for a month without obligation.

BORSU INTERNATIONAL Ltd is part of the Royal Dutch Borsumij established for more than 100 years. Therefore back-up will be provided on an international basis to the level required by the business world.

BORSU INTERNATIONAL Ltd.
2 Queens Gardens
Brighton
Sussex BN1 4AR
Tel: 0273-674351/2/3/4
Telex: 877533 BORSUG

BORSU

COMMODORE

COMPUTING INTERNATIONAL £1

USA $3.25 GERMANY DM 7.5

SPECIAL FUTURE ISSUE

MARCH 1986

128, 64, C16, Plus/4 ????
LOOK INTO YOUR FUTURE..

What you'll buy in sound... music... and modems...

Top C16 games and more for the Plus/4...

Memory for the 128...

CCI Mega-reviews the latest and greatest 64 games...

Special tips for the 64 and C16...

Basic for absolute beginners and much, much more

Get the best!

... or one of these
Hi! I'm Max Headroom- I'll be ultra-megabig in your future!
BACK TO THE FUTURE

the game and the smash film...

SCOOP REVIEW!

FREE! 36 page BUSINESS and AMIGA Magazine

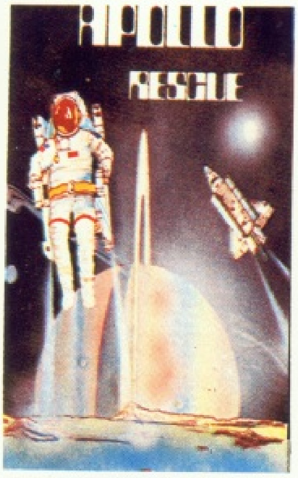
SEE INSIDE FOR MONEY-OFF VOUCHERS

WIN – MAX HEADROOM GAMES, BOOKS TEE SHIRTS; A MARCONI TRACKERBALL; AN ACTIVISION MUSIC STUDIO; PLUS/4 BOOKS AND MUCH MORE

To all C16/Plus 4 Owners

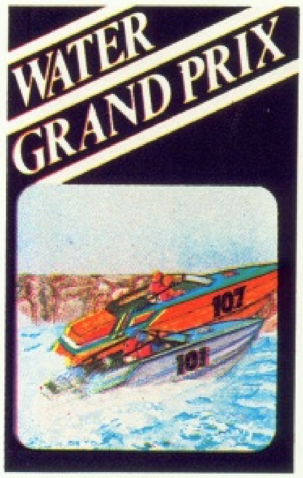
Tynesoft's January big name and value for money releases – watch out for our new titles on your machine every month in 1986.

FOR THE C16/PLUS 4, STARTER PACK 2



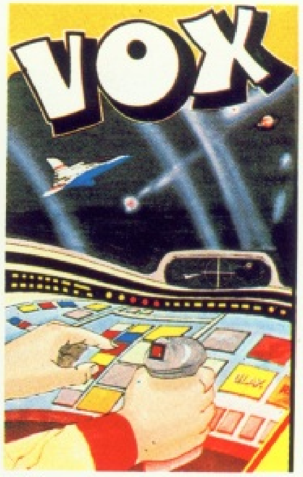
APOLLO RESCUE
Apollo Rescue Mission is a two part game, challenging and full of action. Your mission is to retrieve and reassemble sections of the ill fated Apollo 16 scattered over the lunar surface. Assembly of rocket must be done in the correct order to enable you to complete your task and blast off to a new universe. Beware of those dangerous aliens, that have to be eliminated with your laser. The second part of the mission is to retrieve Satellites floating in space with the use of a special arm, to be returned to earth for servicing.

AUTOBAHN
A fast Arcade game where your driving skills are tested to the full. Your brief is to take out a new prototype car on a stretch of the German Autobahn and put it through its paces.
You have to complete 4 challenging tests before your job is finished.



WATER GRANDPRIX
You are in the driving seat of a powerful speed boat entered in the Annual Water Grand Prix.
Skill is needed to navigate your boat along the twisting river. Avoiding the river banks and passing your fellow competitors along the way to victory.

R.R.P. **£14.95**



VOX
You have to defend the 8 Cities of the planet 'VOX' from the aliens invasion force. You must destroy the alien craft by moving a sight over the screen and firing guided missiles to the sight's location. There are 40 levels. Each level consists of a set number of alien craft but an unlimited number of Ammo Saucers and Stunt Planes. To complete a level you must destroy all the aliens apart from Ammo Saucers and Stunt Planes.

WINTER OLYMPICS

Your opportunity to compete with the best in the world in the following Winter events: Down Hill, Ski-Jump, Cresta Run, Speed Skating, Slalom Skiing and Curling. Best of Luck in your challenge to become World Champion.

R.R.P. **£6.95**

TYNESOFT
COMPUTER SOFTWARE

FORTHCOMING RELEASES:

POGO PETE
MOUNT VESUVIUS
GUNSLINGER
JET SET WILLY

If you require any of our software fill in the Order Form below.
All games are post and packing free or your can order by Access/Visa by ringing 091 414 4611.

You can also register on our Mail List by filling in the form below and sending it to:
Tynesoft Computer Software, Addison Industrial Estate, Blaydon, Tyne & Wear, NE21 4TE.

☐	S. PACK 2	£14.95
☐	WINTER OLYMPICS	£6.95
☐	Register on Mail List	£0.00
☐	TOTAL	

Title (Tick) Mr Mrs Miss
Initials ☐☐☐
Surname ☐☐☐☐☐☐☐☐☐☐☐☐
Address
Post code ☐☐☐☐☐☐☐☐
Telephone no. (including STD code) ☐☐☐☐☐☐☐☐☐

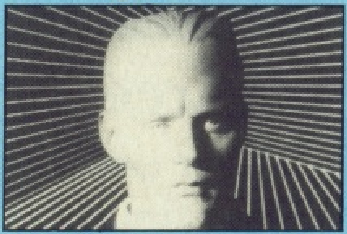
The one magazine every Commodore owner needs

Inside

COMMODORE
COMPUTING
INTERNATIONAL

Vol 4 No 7
March 1986

Feature of the month



MAX HEADROOM 28
Computer generated TV presenter Max Headroom follows his success on TV with a computer game. Read on to see how Max will effect your future.

Look out for our money saving vouchers on page 81!!

...NEWS

OVERVIEW 5
Commodore closes production facility... Amiga met with enthusiasm at Which?... 128D launched

PRODUCT UPDATE 7
New Modems... flowchart program... filtered connectors and sockets

...FEATURES

BUYERS GUIDE 9
Continuing our guide to a better computing future with sound peripherals and modems

BACK TO THE FUTURE 46
Looking at the film and a sneak look at the game of the film

AMIGA DIARY 51
The trials and tribulations of one man's dreams and views on the Amiga

PLUS/4 INSIGHTS 54
A further look inside the Plus/4 examining the possibilities open to owners

BEGINNERS BASIC 58
We continue to pave your way to a better programming future

128 MEMORIES 61
Beginning a series revealing the memory maps of the 128. Don't miss it!

PET PAGES 76
A painless way to transfer from disk to tape

...CONSTANT FACTORS

BOOK REVIEWS 23
Is the use of the word 'advanced' a selling ploy? Read on as we read on

MUD PAGES 36
Zaphod the Arch Wizard reports that wizards are playing up. Will they be fodded?

LETTERS 55
Advice to those who have written in with C16 and Plus/4 questions

HINTS AND TIPS 64
POKEing around your 64

MACHINE CODE 69
Numeric to string convertor with image formatting

...GAMES SECTION

COMPETITIONS 26
Go back to the future with CCI for some incredible prizes

MEGA-REVIEWS 33
Old Yakkety Yak returns, while we Rev through the latest titles without being Mercenary!

GAMES NEWS 34
Lots to look forward to... first Amiga game... award for 'longest wait for iminent release'

CHARTS 48
What! It can't be true... the number one spot is not held by Ocean or US Gold!

SOUND SENSE 49
Rob Hubbard, the man behind some of the best games sound tracks around, talks to CCI

C16 SELECTION 57
Zap, blast and speed your way through this batch of C16 titles

...REVIEWS

PAZAZZ/SCREENPLAY 17
Creating the world of theatre on your computer

MS2000 20
The latest mouse is no hard cheese!

THE REAL YOU 22
Discover yourself if you dare!

NEXT MONTH

Comprehensive buyer's guide to all the peripherals you will ever need... exclusive games previews... special features for C16, Plus/4 and 128.

YOUR NEW DISK DRIVE FOR COMMODORE 128 AND 64

commodore
SFD 1001

SFD 1001

1 MEGABYTE DISK DRIVE

ONLY £239* plus VAT

Fast Access Plus 1000k per disk!

- Three times the capacity of the 1571
- Four times faster than the 1541
- Six times the capacity of the 1541 or 1570
- Proven technology based on reliable 8250 dual drive
- Connects directly to Commodore 128, Commodore 64, Commodore 700, 4000 and 8000 series

SFD1001 + INTERFACE + CABLE

- SFD1001 1Mb disk drive
- Brain Boxes C128/64 convertible interface
- IEEE parallel data cable
- Back up and file conversion utilities for Superbase users

SAVE £55 **£279* plus VAT**

PLUS free upgrade for existing Superbase users

SFD1001 + INTERFACE + CABLE PLUS *Superbase*

- SFD1001 1Mb disk drive
- Brain Boxes C128/64 convertible interface
- IEEE parallel data cable
- Back up and file conversion utilities
- *Superbase* powerful programmable database

SAVE £65 **£359* plus VAT**

ACCESS VISA or cheque with order

*Plus £15 P&P anywhere in the U.K.

Precision Software

Precision Software Limited
6 Park Terrace, Worcester Park
Surrey KT4 7JZ
Telex: 8955021 PRECIS G

01-330 7166

...news...news

JOBS GO AT COMMODORE

Despite Christmas sales which far exceeded expectations and which managed to have Commodore floundering to supply enough computers to meet the demand, the production facility at Corby has been closed.

This means the loss of 250 jobs, most of which are assembly line workers, but others have gone from various white collar departments. This leaves only 170 employees at Corby, and reflecting these cuts is the move of Chris Kaday to Sales and Marketing Director, the position previously held by Paul Welch – who has now gone to Commodore Electronics on assignment, though whether he will return is open to debate.

Despite this move, and the apparent non-appearance of Commodore at the prestigious CES show during January, Commodore have still shown the Amiga at the Which Computer Show between 14-17 of January, and expectations seemed high.

Kaday comments:"Let those of you who already own Commodore products – and those who plan to buy them this year – rest assured on one point. We are here to stay."

OPTICAL DISKS

Optimem, the division of Xerox have announced – at last – a read/write capable optical disk. This allows vast amounts of memory to be accessed amazingly quickly, incomporably faster than any similar hard or floppy disks.

To coincide with this 3M have agreed to provide the media required, and this joint venture should have the product on the market within two years.

THE UPS AND DOWNS OF AMIGA

Some really surprising happenings have been going on recently in the Amiga world. An American syndicate of computer journalists recently voted it the worst hardware product of the year (equal with the IBM PCjr).

On the other hand the Observer just gave it a prize for the most impressive? To understand these differing views is almost impossible, although one software house I spoke to recently remarked on the difficulties of making the Amiga perform to the standard everyone expects, having seen demos such as Robot-City.

As they say, it's a mad mad mad world!

Comments...

Dear Reader,

It is ironic that the unfortunate changes on which Commodore comments in this issue of C.C.I. should take place just when so many new enthusiasts have become Commodore owners. In spite of the problems in the home computer market as a whole, the rise in Commodore numbers will in itself provide greater assurance for what is one of the most important factors in the enjoyment of owning a computer: a constant supply of new and improving software – games included, of course – and add-on hardware.

C.C.I. is very conscious of the need to encourage this supply and to tell you what you can buy that you will find most enjoyable and useful. To help you, this month, we have introduced a new and, we hope, regular feature: Money-off Vouchers.

You will see, at the back of the magazine a special page that offers C128/64, Plus/4 and C/16 owners vouchers, completely free to C.C.I. readers. These mean you can buy, direct, interesting products, including games, at lower than usual prices.

We believe you will find these free vouchers a useful way of reducing the cost of items you want to buy.

We deliberately chose to begin the voucher scheme not just with C64 products but also with games for the Plus/4 and C16 machines. C.C.I. thinks it is important to encourage manufacturers to increase the comparatively limited range available to these now much more widely used computers. Our information is that more manufacturers are beginning to look in the until now neglected direction of the Plus/4 and C16, in addition, of course, toward the more generally accepted C64.

The Money-off Vouchers are just one example of the changes and advantages for you we intend to introduce into C.C.I. over the coming months. We look forward to hearing your views on the good things you will find in C.C.I. in the future. In the famous phrase, if you like what we do, tell your friends, if you don't, tell us.

Yours sincerely,
Antony H Jacobson
Publisher

GOODIES GALORE!!

We've books, T-shirts, a Marconi trackerball, an Activision Music Studio, and lots more to give to YOU. Prizes will be sent to the first people who write to CCI listing in order of preference the contents of this issue.

If you are a Plus/4 owner, let us know what software you would like to see for the Plus/4. In return we have Plus/4 books to give away.

Don't forget to include your name and address.

Editor .... Susan Pearce
Staff Writer .... Francis Jago

Subscriptions/Production Executive .... Sharon Gilkes

Illustration ....MJG and GB

Advertisement Manager .... Peter Chandler

Publisher....... Antony Jacobson

Cover Design Graham Baldock
Cover photography................ Paget Joseph. Illustration by MJG

Typesetting.. Merton Graphics

Telephone 01-278 0333
Editorial ext 274
Advertising ext 280
ext 286
Subscriptions ext 274

Contributors:

Bill Donald
Julian Rosen
Tony Lydeard
Max Jacobson
Michael Tinker
Pat Richardson
Ian Bennett
A Eskelson

Distribution by Comag, Tavistock Road, West Drayton, Middx UB7 7QE.

Printed by Chase Printers Group, London and St Austell

Published by Croftward Limited
Finsbury Business Centre
40 Bowling Green Lane
London EC1R 0NE

ISSN 0276-596X

Commodore Computing International - an independent magazine for Commodore computer users - is not connected in any way with Commodore Business Machines UK Ltd. It is published 12 times per year by Croftward Limited. The publishers do not accept liability for any incorrect statement or errors contained in material from independent sources or authors which may be reproduced from time to time.

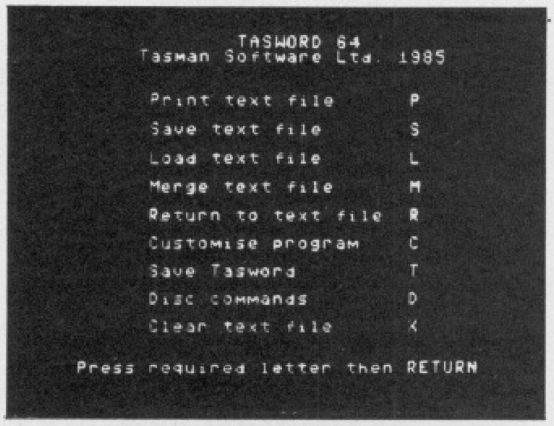
© Croftward Limited 1986

RUN "TASWORD"
© 1984 TASMAN SOFTWARE LTD.
TASMAN
SOFTWARE

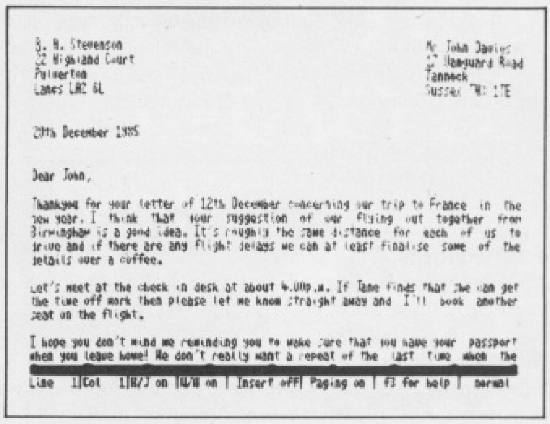
TASWORD 64

THE WORD PROCESSOR. 80 CHARACTERS PER LINE·ON THE SCREEN!

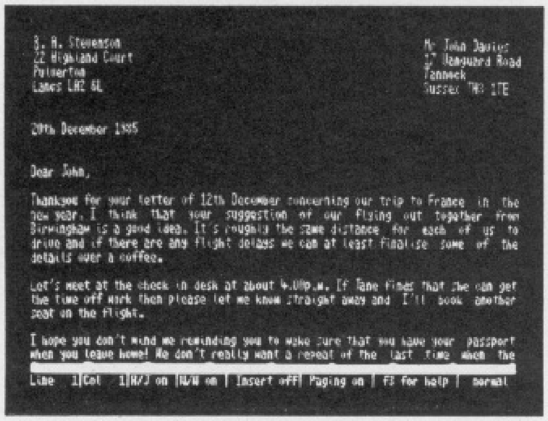
A WORDPROCESSOR PROGRAM THAT'S AS GOOD AS YOUR 64.



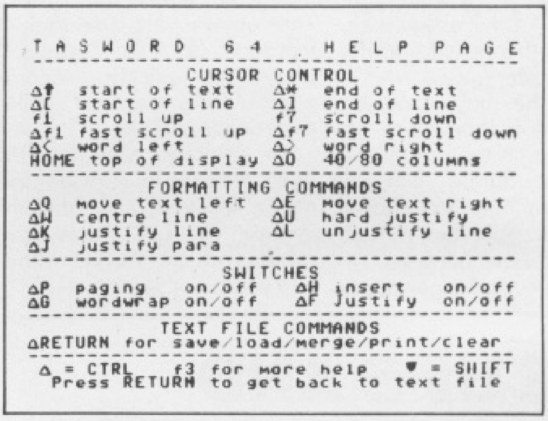
```
        TASWORD 64
Tasman Software Ltd. 1985

   Print text file      P
   Save text file       S
   Load text file       L
   Merge text file      M
   Return to text file  R
   Customise program    C
   Save Tasword         T
   Disc commands        D
   Clear text file      K

Press required letter then RETURN
```



```
B. H. Stevenson                                    Mr John Davies
22 Highland Court                                  17 Vanguard Road
Pulverton                                          Tanneck
Lanes LH2 6L                                       Sussex TN3 1TE

20th December 1985

Dear John,

Thankyou for your letter of 12th December concerning our trip to France in the
new year. I think that your suggestion of our flying out together from
Birmingham is a good idea. It's roughly the same distance for each of us to
drive and if there are any flight delays we can at least finalise some of the
details over a coffee.

Let's meet at the check in desk at about 4.00p.m. If Jane finds that she can get
the time off work then please let me know straight away and I'll book another
seat on the flight.

I hope you don't mind me reminding you to make sure that you have your passport
when you leave home! We don't really want a repeat of the last time when the
Line  1|Col  1|R/J on |W/W on | Insert off| Paging on | f3 for help |  normal
```



```
B. H. Stevenson                                    Mr John Davies
22 Highland Court                                  17 Vanguard Road
Pulverton                                          Tanneck
Lanes LH2 6L                                       Sussex TN3 1TE

20th December 1985

Dear John,

Thankyou for your letter of 12th December concerning our trip to France in the
new year. I think that your suggestion of our flying out together from
Birmingham is a good idea. It's roughly the same distance for each of us to
drive and if there are any flight delays we can at least finalise some of the
details over a coffee.

Let's meet at the check in desk at about 4.00p.m. If Jane finds that she can get
the time off work then please let me know straight away and I'll book another
seat on the flight.

I hope you don't mind me reminding you to make sure that you have your passport
when you leave home! We don't really want a repeat of the last time when the
Line  1|Col  1|R/J on |W/W on | Insert off| Paging on | f3 for help |  normal
```



```
T A S W O R D   6 4     H E L P   P A G E
------------------------------------------
             CURSOR CONTROL
Δ↑   start of text    Δ*   end of text
Δ[   start of line    Δ]   end of line
f1   scroll up        f7   scroll down
Δf1  fast scroll up   Δf7  fast scroll down
Δ<   word left        Δ>   word right
HOME top of display   Δ0   40/80 columns
------------------------------------------
          FORMATTING COMMANDS
ΔQ   move text left   ΔE   move text right
ΔW   centre line      ΔU   hard justify
ΔK   justify line     ΔL   unjustify line
ΔJ   justify para
------------------------------------------
                SWITCHES
ΔP   paging   on/off   ΔH insert   on/off
ΔG   wordwrap on/off   ΔF Justify  on/off
------------------------------------------
           TEXT FILE COMMANDS
ΔRETURN for save/load/merge/print/clear
------------------------------------------
 Δ = CTRL    f3 for more help    ♥ = SHIFT
  Press RETURN to get back to text file
```

"Tasword is pretty unique product. It's 80-column display is well readable and backed up by a well thought out program that really can hold its own in professional use." ***Commodore User November 1985***

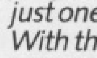
TASWORD 64 is a new member of the highly acclaimed TASWORD family of word processing programs. Eighty characters per line on the screen is just one of the features of this versatile program. With the eighty character display you know that WHAT YOU SEE IS WHAT YOU WILL GET when you print your text. No need for text reformatting before printing and no need for horizontal scrolling.

Your text is printed just as you set it out on the screen. TASWORD 64 comes complete with a quality manual and TASWORD 64 TUTOR. This teaches you word processing using TASWORD 64. Whether you have serious applications or simply want to learn about word processing TASWORD 64 and TASWORD 64 TUTOR make it easy and enjoyable.

Available from good software stockists and direct from:

Another remarkable feature of TASWORD 64 is the price!

CASSETTE	***£17.95***
DISC	***£19.95***



Tasman
SOFTWARE

Springfield House, Hyde Terrace, Leeds LS2 9LN. Tel: (0532) 438301

One of a famous family:
- ***TASWORD TWO (ZX Spectrum)***
- ***TASWORD MSX (MSX Computers)***
- ***TASWORD 464 (Amstrad)***
- ***TASWORD 464-D (Amstrad)***
- ***TASWORD 6128 (Amstrad)***
- ***TASWORD EINSTEIN (Tatung Einstein)***

If you do not want to cut this magazine simply write out your order and post to: TASMAN SOFTWARE, DEPT CCI, SPRINGFIELD HOUSE, HYDE TERRACE, LEEDS LS2 9LN

I enclose a cheque/PO made payable to TASMAN SOFTWARE Ltd OR charge my ACCESS/VISA number ....

NAME ______________________

ADDRESS ______________________

____

____

ITEM	*PRICE*
______________	£ ______
______________	£ ______
______________	£ ______
Outside Europe add £1.50 airmail per item	£ ______
TOTAL	£ ______

Telephone ACCESS/VISA orders: Leeds (0532) 438301

Please send me your FREE brochure describing TASWORD 64 ☐ *Tick here*
All prices include VAT, postage and packaging

VISA

CCI

...news ...news

AMIGA CAUSES STIR AT WHICH?

Commodore appeared very pleased by the reaction of people to the Amiga at its UK debut on January 14th. The Commodore stand, dedicated almost entirely to the Amiga, showed it in its element, with the obligatory bouncing ball demos.

Also showing on the Commodore stand were software houses, parading the fruits of their development work. Notable among these was Cygnet, who showed an early version of their typesetting and basic newsletter making program.

Electronic Arts' newest package, Deluxe Paint was also there, and for the creative artist is must be the most complete package on a micro to date.

Chris Kaday, Sales and Marketing Manager for Commodore seemed pleased with the reaction of software houses to the Amiga:

"The European Developers Conference we held in December '85 was an outstanding success, and much of the software on show today was sourced in the UK", he said.

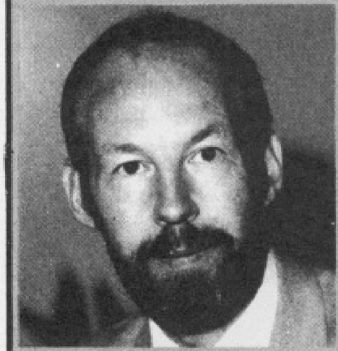
The crowds gathered around the Commodore stand at the Which? Computer show. The main attraction was the Amiga and its now famous bouncing ball demonstration.

QUIET LAUNCH FOR 128D

Although overshadowed by its newest brother, the 128D surprised quite a few people with its launch at the Which Computer Show? When I first saw the machine, nearly six months ago, it was just a 128 with a 1571 disk drive on the end. For its launch, Commodore have given it a box not unlike the Amiga and with a neat detachable keyboard.

Another surprise was the inclusion of a 1571 drive, which has been dropped as an accessory to the 128 due to costs. The 128D comes complete with a 40/80 column mono monitor and costs £499 + VAT.

Commodore Opinion...



This month's Commodore Comment comes to you from Chris Kaday, UK Sales and Marketing Director.

The opinions published here are those of Commodore, and do not necessarily concur with the views of CCI.

"I am sure that readers of this magazine cannot fail to have noticed the recent announcement from Commodore UK to close its production facility in Corby with a loss of some 250 jobs.

The reason for this décisive action was the existence of excess manufacturing capacity in Commodoreworldwide and the need to concentrate production in fewer and higher technology plants. Naturally we greatly regret the effect on the employees concerned and on the Corby community, which has suffered more than its fair share of unemployment over the last few years.

However we still employ 170 people in our sales, marketing, service and distribution functions at Corby and the attention of this slimmed down team is now focused on the agressive marketing programmes which are aimed at retaining and growing Commodore's marketshare in the UK.

It is not anticipated that our action will affect prices, availability or support of our products. Our action has been necessary to ensure that our resources are in line with the size of the expected UK market for 1986 which, although significant, will be considerably smaller that it was during the boom times of 1983.

In order to ensure continued success in the UK the first of our marketing initiatives centred on the Which Computer? Show at the NEC from 14-17 January, where Commodore showed the Amiga to the public for the first time, as well as launching the 128D, a superb low priced small business machine. We were particularly excited about the exposure of the Amiga to the general public, as the previous behind closed doors presentations to the trade resulted in frankly ecstatic praise for the machine.

We are very positive about our future in the UK and whilst we appreciate the concern that our recent action has obviously caused, we are determined to succeed and will remain high profile presence in the UK computer market of 1986 and beyond.

Let those of you who already own Commodore products – and those who plan to buy them this year – rest assured on one point. We are here to stay."

Upgrade Your PET

Supersoft have announced several new products for Commodore's PET series.

Most PET's were sold with just 8 or 16K of RAM. Supersoft's RAM Plus boards allow an upgrade to a full 32K. Any 16K PET can have 32K of memory with the RAM Plus 16 (£55), while any large keyboard machine can be expanded from 8-32K with the RAM Plus 24 (£60).

Also new is the RAM Plus 24S (£60), a 24K expansion for the oldest 8K PET's with calculator-style keys and a built-in cassette deck.

Basic 2+4 Board (£65), allows any 40 column PET to run both Basic 2 and Basic 4. One command switches between the two, eliminating compatibility problems.

Lastly, Supersoft launch the RAMRON Board, a ROM/EPROM emulater with 8K of battery backed up RAM (£65). This is also available to special order with 16K or 32K or 32K of RAM (quotation on request).

Contact: Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex HA3 7SJ. Tel:01-861 1166.

Flow charter

Flowcharter is a machine language program which Supersoft claim "could revolutionise Basic programming for beginners and professionals".

It is a program for the 64 that will display or print a flow chart of a Basic program after it has been written. When you can't see what is going wrong with your program, Flowcharter provides you with a flow chart within seconds.

Flow charts can be displayed on the screen or printed out. Recommended printers include the Commodore 1525, 1526, MPS-801, MPS-803, and any Epson compatible dot matrix printers.

Flowcharter is available on disk (£14.95) or cassette (£12.95).

Contact: Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex HA3 7SJ. Tel:01-861 1166.

Plugs and Sockets

Plugs appear to be the thing of the moment judging by the number of press releases we've received on the subject.

Duraplug have introduced the MultiLine plug, a four-in-one 13amp enabling up to four appliances to be connectedto a single socket outlet without the need for additional plugs and adaptors. Available in black or white and fused at 5amps, the MultiLine plug costs around £5.

Also from Duraplug is the Duraline range of four-way socket outlets. The two models are the non-fused 4135 (£9) and fused 4136 (£11).

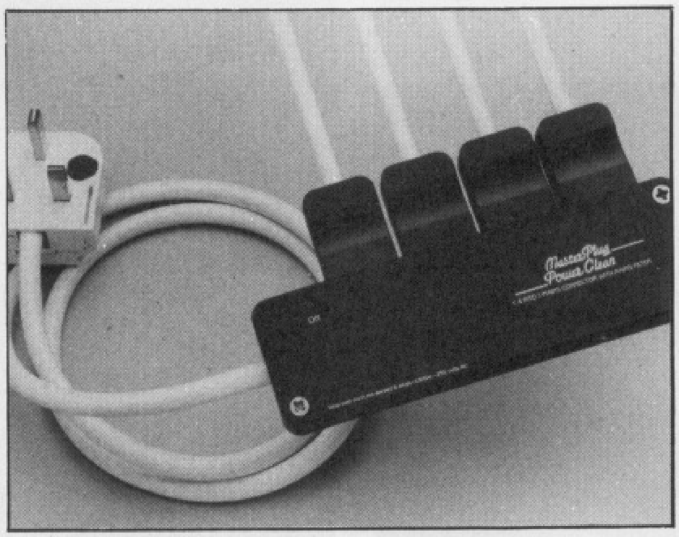
Both models feature a rocker on-off switch, a neon mains-on indicator and a removable terminal cover for easy wiring. The sockets can also be fastened to walls without the need to detach the main cover.

Smoothline is a new four-way filtered connector from Conblock Electrical, designed specifically for better home computing. Providing four filtered outlets (each rated at 6amps max), the Smoothline comes complete with mains lead and plug, and is fitted with four minature plugs for wiring to computer equipment.

Costing £18.99, the Smoothline eliminates many of the system problems caused by interference transimitted via the mains supply.

Contacts: Duraplug Electricals Ltd, Westwood Works, Margate Road, Broadstairs, Kent CT10 2QL. Tel:0843 68771

Conblock Electrical Ltd, Mochdre Industrial Estate, Newton, Powys, S Wales. Tel:0686 27100.



Computers in Education

Collegiate Microcomputer is an American journal which offers a forum for the exchange of ideas on the role of the microcomputer in all subjects and areas of college and university life.

The publishers are calling for papers for inclusion in the journal. Material appearing includes uses of hardware and software, descriptions of courses, units and topics using microcomputers, results of research using microcomputers, analysis of experiments using microcomputers, projects, suggestions and tips, write-ups of experiences as microcomputer consultants, reviews of literature, evaluation of microcomputer use in the office and in materials preparation for teaching and research.

Subscription rates are $28 per year and $36 per year for non-US subscriptions.

Contact: Collegiate Microcomputer, Rose-Hulman Institute of Technology, Terre Haute, IN 47803, USA.

64/128 Modem

Miracle Technology's new 64 Multimodem gives access not only to Prestel, Micronet, Microlink and viewdata services, but also to databases, bulletin boards, electronic mail, telex and user-user communications.

Menu-driven and multi-speed, 64 Multimodem supports CCITT V21/23 and Bell 103 standards, handling baud rates of 300/300, 1200/75 and 75/1200. All software is on-board in ROM. Features include autoanswer, autodial, save and print frame, automailbox with edit and save and telesoftware downloading.

The modem, costing £98.50 (£116.15 inc VAT and UK delivery), fits the computer's cartridge port.

Contact: Miracle Technology, St Peters Street, Ipswich IPI 1XB. Tel:0473 50304

EPAD for Modem

Tandata now have an enhanced version of the Tm512 modem. The Tm512E features EPAD, the error-checking protocol developed for use on PSS (Packet Switch Services). EPAD is designed to ensure error-free data transfer to and from a terminal or computer and the PAD (Packet Assembler/Disassembler).

Retailing at £339 exc VAT, the Tm512E auto-dial, auto-answer modem operates at V21 (300/300 bps), V23 (1200/75, 75/1200bps and 1200/1200 half duplex) with Bell available for oversea use. The modem's microprocessor and operating system senses the speed and parity at which its micro/terminal talks to the modem, will select from traditional pulse or tone dial telephone line by 'listening' to the line and will automatically select the right baud rate to use when the host computer's modem answers without the modem or the micro/terminal having to be re-configurated.

Contact: Tandata Marketing Ltd, Albert Road North, Malvern, Worcs WR14 2TL. Tel: 06845 68421.

Electronic Music

Learning a few simple notes, or making professional sounds – the musical possiblities of your home computer are endless.

Electronic music has become very popular in recent years. From the electronic sounds of groups such as Kraftwerk and Jean Michel Jarre to the computer generated effects heard on Paul Hardcastle's 19, the computer plays various roles in the generation and production of music.

In the recording studio it is not unusual for a drummer to be replaced by an electronic drum machine. On stage you will undoubtedly find a microprocessor in some form.

Computer-generated music has, in the past, been criticised for sounding too 'clean'. The lack of spontaneous creativity – and the lack of mistakes. The instruments of today are capable of almost anything – some even have the facility to introduce random mistakes!

Music and the home computer is an area of computing that is fast expanding. There are numerous musical software packages around to enable you to make music with your micro, but it is the add-on musical peripherals that we are focusing on in this issue.

For beginners

If you are not a musician, but would like to learn how to get the best out of your computers musical capabilities, an ideal package to start with is Commodore's Music Maker. At under £20, Music Maker turns your 64 into a keyboard via a keyboard overlay and accompanying software. You can easily pick up the basics of music and write your own tunes.

Additionally from Commodore are the Playalong albums. Although not really a peripheral, they are so good that we will stretch the rules a little here.

Three Playalong albums are currently available: Pop, Classics and the Beatles. These albums allow someone with absolutely no musical knowledge to play along with well-known hits. You can quickly learn to play the songs yourself and can soon astound friends and relations with your new-found talent!

Digidrum
SYNTRON
Digidrum
PROFESSIONAL DIGITAL DRUMCOMPUTER

Sampling sounds

It is also possible now to produce effects such as those found on Paul Hardcastle's Number One hit record, 19, with your computer. These are achieved by means of a digital sampler.

Three samplers appeared on the market almost simultaneously last summer. Commodore again have the perfect product for the beginnner – the Sound Sampler. The cheapest of the bunch, it turns your 64/128 into a synthesiser and a sound recording studio.

A sampler samples sounds. You can record any sound from a piece of music to a cough or slamming door and play that sound back at a faster/slower speed, backwards, repeated or looped.

Microsound market the Autographics Digital Music System, designed to give musical results similar to those produced by expensive multi-track recording studios. The software is designed to be used via your computer's Qwerty keyboard in addition to Microsound's keyboard.

The sampler most suited to professionals is the Microvox sampler from Supersoft. Including its own keyboard, it comes with a comprehensive library disk of sample sounds including the now infamous Suzy giggle. (Try keeping a straight face when listening to it.) It also has the recommendation of Feargal Sharkey, who was one of the first people to own a Microvox sampler.

Beat the drum

If you've always fancied yourself as a demon drummer, Syndromic's Digidrum will be the answer to your dreams. It is a professional digital drumcomputer designed to operate with the 64, using 'live' digital sound samples which are encoded onto the software.

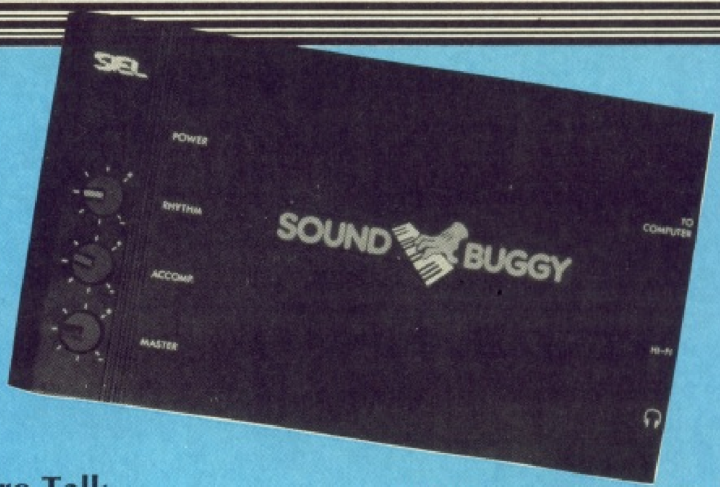
Additional software is now available in the form of Sound Set 1. Over 50 new sampled sounds are included from tom-toms to Latin effect.

Enhancing Sound

While many of the available products make use of the capabilities of the 64's SID chip, others are appearing on the market which give your computer extra sounds.

Siel's Sound Buggy, for example, allows the user complete control over a new sound chip. Commodore's Sound Expander turns the computer into a generator, enabling eleven voices to be used at one time.

With the event of MIDI (musical instrument digital interface), the option of attaching a musical keyboard to your home computer arises. Any MIDI keyboard can be interface via a MIDI interface. Siel's CMK 49 is designed specifically for the 64 and, as such, fits directly to the expansion port eliminating the extra expense of an interface.



Micro Talk

Another area of computer sound is, of course, speech recognition and synthesis. Somewhat surprisingly, there are now less speech products on the market than this time last year.

Voicemaster, from Anirog, combines three functions in one package: speech synthesis, word recognition, and composing and performing music in real time. Unfortunately, this is another product that is no longer being promoted, so if you're interested rush down to your local computer dealer while stocks last.

For details on a wide variety of sound products, refer to our checklist.

Speech Recognition & Synthesis

Product	Features	Machine	Price	Company
Sweet Talker	Synthesiser—allophone system, 3" square, 1½" high, gives examples & demonstrations. Shape & colour as Commodore	64	£24.95	Cheetah
Voicemaster	Unique 3-in-one package, speech reproduction, speaks in own voice. Voice harp—just whistle or hum to produce music	64	£59.95	Anirog
Currah Speech 64	"Y" cable available, converts text to speech direct from screen, uses allo phones system, infinite vocab.	64 (compatible with C128)	£21.95	Welwyn Electronics

MUSIC ADD-ONS

Product	Features	Machine	Price	Company
Datel Sampler	Hardware in corporates full 8-bit D to A and ADC conversion. Software includes sample editing	64	£49.99	Datel
Music Maker	Starter program. Turns 64 into keyboard.	64,128	£19.99	Music Sales
Playalong Albums	3 available : Pop, Classics, Beatles. 12 songs. Auto playback or will teach to play melody.	64, 128	£9.99	Music Sales
Sound Studio	2 programs in 1. (1) Turns computer into synthesizer. On screen controls. 60 sounds in memory. (2) sound recording studio (3 channels). Real step time.	64,128	14.99	Music Sales
Sound Sampler	Hardware & software package with audio lead and mike. Samples and digitizes sound. Editing facilities. Pitch sampler. Drum & echo facilities.	64,128	£69.99	Music Sales
Sound Expander	Hardware & software package. Gives 64 extra sounds. Turns computer into generator using F.M. technology. Enables 11 voices to be used at one time. Easy play features built in.	64,128	£99.99	Music Sales

Stop playing games– Start earning money!

The computer that's been giving you such a fun time with games now gives you the chance to earn some money. Helping you with word processing, secretarial work and even running your own business.

All because of the brilliant new word processing package, SuperScript from MicroPro — the makers of WordStar — the world's best selling word processing packages for microcomputers.

Now open for business

SuperScript **writes letters, invoices, reports, tables, documents, it stores, edits and even checks spelling.**

Versatile SuperScript SuperScript combines word processor, spelling checker, calculator and mail-merge facility, all in one package. So SuperScript gives you all the tools you need to produce high quality reports, tables, lists, personalised letters and prints labels quickly and efficiently.

Simple for the beginner If you are a newcomer to word processing, SuperScript puts you immediately at ease.
Each command is a single word, and for each command you simply move the cursor. You don't even have to type the command.

Good with numbers SuperScript allows you to extend your editing line up to 250 columns for wide documents like financial statements, and with decimal tabs it's easy to enter properly justified tables of numbers.
SuperScript's complete set of calculator functions can be used interactively or you can operate on numbers from the text of your document. Apart from the usual mathematical functions like add, subtract, multiply, divide, and percentages, you have the ability to add rows, columns or even whole tables.

Good with spelling, too The built-in spelling checker goes right through your text, checking for errors. You have the option to correct any error, ignore it, or add the word to its 30,000 word dictionary.

Editing options SuperScript gives you all the editing options of a business-style word processor, with full block manipulation for cut-and-paste; overtype or text insertion modes; search and replace with pattern matching and optional case discrimination; backward search, case shifts for single words or larger blocks of text. And much more.

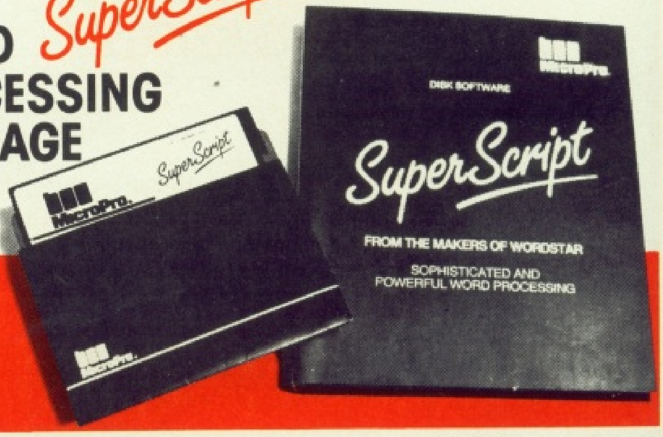
Powerful for the experienced user SuperScript also gives you the ability to cut work down to a minimum by storing your own command sequences or text on single keys. This means that with a single keystroke you can reproduce commonly used phrases or multi-line addresses from a glossary, load in document formats or execute a pre-programmed sequence of operations.

Mailings with SuperScript Personalised mailings are easy with SuperScript. You can enter the data manually or use data extracted from your spreadsheet or database. Merging can be selective. A mailing labels template is included to help you complete your mailing and you can alter the template to suit your own label format.

Attention Easy Script users! If you're already an Easy Script user, then SuperScript is the obvious next step. With its enhanced features and more powerful facilities, you'll be able to do so much more. There are no compatibility problems either. You can run your Easy Script data or Easy Spell dictionary disks under SuperScript. And by returning your Easy Script disk can obtain an upgrade for just £49.95.

AVAILABLE FOR
COMMODORE 64, 128
ATARI 800XL, 130XE · APPLE IIc, IIe
SuperScript Word Processing Software is available direct complete with Comprehensive User Manual. Only £79.95 including VAT and Postage.
OR FROM ALL GOOD DEALERS.

NEW WORD PROCESSING PACKAGE SuperScript


MicroPro
DISK SOFTWARE
SuperScript
FROM THE MAKERS OF WORDSTAR
SOPHISTICATED AND POWERFUL WORD PROCESSING
MicroPro
SuperScript
MicroPro

MicroPro.
MicroPro International Ltd
Haygarth House, 28-31 High Street, Wimbledon Village,
London SW19 5BY

ORDER BY PHONE

ASK YOUR LOCAL DEALER FOR THE SUPERSCRIPT PACKAGE, OR ORDER DIRECT BY PHONING
0483 503121
QUOTING YOUR CREDIT CARD NUMBER OR BY COMPLETING AND RETURNING THE ORDER FORM WITH YOUR CREDIT CARD DETAILS OR REMITTANCE

SuperScript ORDER FORM
To Dept CC1,CUMANA Ltd, Pines Trading Estate, Broad Street, Guildford, Surrey GU3 3BH
3/86

Please supply the following:

QTY ☐ SuperScript £79.95 (includes P&P) for* ______ computer

QTY ☐ †Upgrade for Easy Script £49.95 (includes P&P) for* ______ computer
†(Your existing Easy Script disk should be returned with this order.) *Commodore 64, 128. Atari 800XL , 130XE. Apple IIc, IIe

I enclose remittance for £______ (Cheques made payable to CUMANA Ltd). Or charge my credit card

Access/Visa No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ Signature ______

Name ______
(BLOCK CAPS)
Address ______
______ Postcode ______

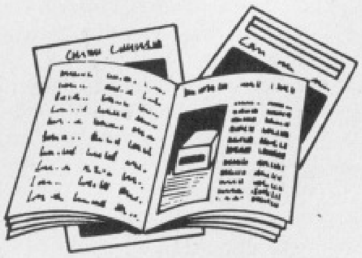
If you are intending to use SuperScript for a specific purpose, we should be interested to have details. Thank You ______

Music Add-Ons (cont)

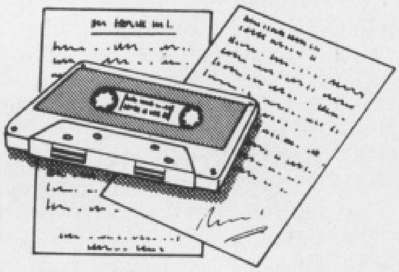
Product	Features	Machine	Price	Company
Syntron Digidrum	Hardware/software package. Using 64 'live' or real recorded drum digital samples the Digidrum allows patterns and songs to be built up and recorded, software comes complete with 16 samples. 8 standard kit and 8 glass samples, Demo songs and patterns provided. Audio and trigger outputs.	64	£65.00	Syndromic
Sound Set 1	Disk containing over 50 new samples for Syntron Digidrum. Latin and Syndrum kits plus full selection of tom-toms, sweep, pitchbend toms, cymbals, hihats, Latin effects and syndrum effects. Also in Cassette.	C16	£16.50	Syndromic
Digital Music System (Microsound)	Designed to provide the ability not only to play back the sampled sounds at various pitches, but also to create complex sounds using Dynamic Amplitude Modulation, Definable Pointer sets, Looping, Reversing, and mixing different sample sounds. Keyboard is a full size 4 octave unit that connects to the 64 via the games ports and requires no external power supply.	64	£165.22	Autographics
RMS 6H	JMS Midi Master Synchronizer allows synchronisation of conventional trigger signals and Sync Signals with MIDI synchron code. Each capable of controlling several devices.	64	£239.00	Rosetti
RMS 20C	Midi Multitrack Composer. An effective step time Composer program offering six channels with Computer input one note at a time. Editing facilities include pitch, gate time, velocity, sound changes and transfer.	64	£49.95	Rosetti
Microvox	Package consists of sampling unit, system disk (with 'start-up' samples) and Library disk. The sampling unit has two programmable 24dB/octave filters and gives a S/N ratio of 59 dB.	64	£229.95	Supersoft
Siel CMK 49	Music Keyboard, 4 octaves, fits directly to expansion port, software allows complete control over SID chip, programming in mono and poly modes, MIDI Master Keyboard function w/split facility, 99 sounds per file possible, 40 sounds immediately available, demo songs.	64	£125.00	Syndromic
Siel Sound Buggy	Comes complete with overlay clip-on keyboard but can be controlled via the CMK 49 keyboard. Allows the user complete control over a new sound chip, auto-accompaniment melody sequencer, sounds and rhythms already programmed, MIDI facilities include Receive/Transmit plus channel and program change for four individual MIDI lines.	64	£99.00	Syndromic
MCS	Combines interface, MIDI link and comprehensive disk software	64	£200	Joreth Music
AMS	Editor, keyboard, linker synthesiser and MIDI modules	64/128	£39.95	Rainbird

Your key to communications!

FREE Electronic Mail . . . International Telex . . . 10 National Chatlines (Interactive Bulletin Boards) . . . 70,000 users across the UK . . . Teleshopping . . . Multi-User Interactive Strategy Games



Instant computer news . . . Hardware and software reviews . . . Technical features . . . Hints and tips



FREE and discounted quality software to download direct to your micro – **24 hours a day**

PRESTEL

300,000 pages of information on the huge Prestel database

for just 20p a day

Micronet 800–
The ultimate peripheral

Micronet 800
8 Herbal Hill, London EC1R 5EJ
Telephone: 01-278 3143

To: Micronet 800, 8 Herbal Hill, London EC1
Please send me a brochure on Micronet 800

Name____________________________

Address__________________________

____

________________Telephone No________________

Age______________ Micro__________________

CCI March 1986

Modems: the Art of Communication

Buy a modem and you'll never look back as you enter the vast world of communications. You will be able to communicate with bulletin board systems, information services, mainframe computers and other home computers.

What is a modem?

A quick bit of technical background first. Modem is a shortened version of the two words which describe its function – Moddulator and DEModulator. To send data over telephone lines the binary signals used by a computer must be converted to the analogue signals understood by the telephone lines – this is the modulation end of the process.

To receive data, the audio signals of the telephone are converted into the electrical impulses of the computer – this is demodulation.

In short, a modem acts as an interpreter, converting the computer's language into one understood by the telephone.

Choosing a modem

The most important variance between different kinds of modems is that of speed: how fast can the modem send or receive a certain amount of information. Your decision will depend on how extensively you intend to use a modem.

When talking about the speed of a modem, you will come across the term baud rate. A very basic explanation of baud is that the baud rate is the number of characters per second the modem can send, divided by 10. For example a 300 baud modem, the slowest used, can send about 30 characters per second.

One of the fastest-growing uses of home computers is the field of telecommunications. This means using your computer to send and receive data over telephone lines. To do this you need a modem.

Modems at each end of a system must send and receive data at the same speed in order to communicate. The three most commons standards are: the 300/300 where both micros transmit and receive at 300bps; 1200/75, with the host transmitting at 1200bps and the user terminal transmitting at 75bps; and similarly the 75/1200 where the host transmits at 75bps and the user transmits at 1200bps; and finally the 1200/1200 where both transmit and receive at 1200bps.

There are modems available which are capable of transmitting at all these speeds.

Other features to consider include auto-answer and auto-dial. The auto-answer function enables the modem to answer the phone and prepare to receive instruction without need for any human assistance. Auto-dial makes life much simpler when dialling engaged numbers. Auto-recall will try to contact any unobtainable numbers.

MIRACLE TECHNOLOGY
64
MULTIMODEM

What to do with it

Particularly with regards to business users, the two most popular reasons for purchasing a modem have been Prestel and Telecom Gold, both inexpensive ways of accessing large amounts of general data ranging from weather forecasts to flight times.

Whereas Prestel has become known for its vast base of information, Telecom Gold is perhaps most widely known as the biggest mailbox service in England.

Mailbox

A mailbox system enables you to send messages to another user, in this country or abroad. You write the message on your computer, send it via the modem to a mainframe line which then stores the message until the person you sent the message to logs on to the system. The message is then displayed on his screen to be read at leisure.

Bulletin Boards

Bulletin boards are appearing in large numbers as more people enter the field of communications from the home. Set up by individual enthusiasts, these can provide information ranging from computing advice to a forum for music views.

Compunet and Micronet 800

Micronet 800 and Commodore's own Compunet are the two networks you will probably hear most about. Both offer a comprehesive selection of services. You can take or offer advice to other users, take advantage of the free software or purchase programs, play games or talk with other users.

MUD

MUD, a multi-user game created on mainframes at Essex University, has gained rapidly in popularity. For the cost of a phone call, you can take part in a vast game of dungeons and dragons with other users.

In addition to Essex MUD, there is Compunet's own MUD and British Telecom have been promising a version which should be released soon. (Keep up to date with all the MUD gossip in our regular MUD column.)

MODEMS

Product	Features	Machine	Price	Company
Multimodem	Multi-speed, baud rates of 300/300, 1200/75, 75/1200. Auto-dial, auto answer, auto-mailbox	64	£98.50	Miracle
Tm512E	Auto-dial, auto-answer, operates at V21 and V23. EPAD	64	£339	Tandata
Voyager	Operates V21 and V23. Auto-dial, auto-answer, optional add-ons	64	£79.95	Modem House
TM 110	1200/75 bps V23 full duplex mode. Able to store and access data in its own CMOS RAM. RS232 micro interface, auto-dial/auto-recall and auto transmission of ID. Up to 8 telephone numbers can be stored.	64, VIC 20	£99	Tandata
TM 200	Includes all the features of the TM 110 and in addition to 1200/75 baud full duplex also 75/1200 bps full duplex, 1200/1200 half duplex to allow two micros to 'chat' and 300/300 bps full duplex with answer and originate mode allowing use with many conventional databases.	64, VIC 20	£173	Tandata
Modem 1000	Can access Prestel, Micronet, with option to access B.T. Gold and 1275 Bulletin boards. Free quarter's susbscription to Micronet with every purchase from Modem House.	64, 128	£99.95	Modem House
WS 2000	Single-unit multi-standard, multi-speed, offering a very wide choice of operational facilities. Can transmit and receive at 300 baud full duplex, 600 baud half duplex, 1200 baud half duplex and Prestel/Telecom Gold.	All with RS232/serial interface	£129.95	Miracle Technology
WS 3000 V2123	Fully intelligent, keyboard-instructed, autodialling, auto-answering. Supports both CCITT and Bell standards, 60-number internal telephone directory, speed buffered RS 232 port. Allows 300, 600, 1200, 1200/75 and 75/1200 baud rates.	All with RS232/serial inteface	£295.00	Miracle Technology
WS 3000 V22	Adds 1200 baud full duplex	All with RS 232/serial interface	£495.00	Miracle Technology
WS 3000 V22bis	Adds 2400 baud full duplex. Protect 3000 Data Security Option £98 when purchased with modem.	All with RS232/serial interface	£650.00	Miracle Technology
Commodore Communications Modem	1200/75 V23 full duplex, asynchronous operation. Easy to fit, easy to use. Connection direct to the cartridge port of a 64 and direct to a British Telecom series 600 socket. Compunet software held in ROM (8K) for immediate interaction after switch on. Soft load options provide 64 to 64 direct communication. One year's free subscription to Compunet.	64	£99.99	Commodore

MEET OUR

COMMODORE

COLLECTION

QuickShot II

For C64 or VIC 20

ONLY **£7.99** POST FREE

- TOP + TRIGGER FIRE BUTTON
- AUTO FIRE MODE • EXTRA LONG LEAD
- STABILIZING SUCTION PADS
- NOW FOR THE C16

ONLY **£8.99** POST FREE

THE WORLD'S BEST SELLING JOYSTICK

SEND NOW AVAILABLE FOR IMMEDIATE DELIVERY

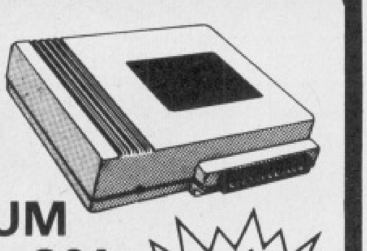
COM-DRUM

DIGITAL DRUM SYSTEM FOR THE **C64**

ONLY **£29.99** POST FREE

- A real digital Drum Machine
- Supplied with 10 pre programmed rythms to start you off!!
- Very simple to use with on screen menus
- Save sequences to tape/disc
- Polyphonic sound
- Real time and Step sequencer
- Complete with all software
- Contains a full Digitally Recorded "Drum Kit" i.e. 8 PCS—Kick Drum, Snare, Hi-Hat, Tom Tom etc
- NOTE: These are real drum sounds not synthesized

SEND NOW AVAILABLE FOR IMMEDIATE DELIVERY



ONLY **£9.99** POST FREE WHEN PURCHASED WITH THE SAMPLER

COM-DRUM SOFTWARE ONLY, TO WORK WITH THE DIGITAL SOUND SAMPLER

DIGITAL SOUND SAMPLING

NOW FOR YOUR COMMODORE 64

COMPLETE PACKAGE

£49.99

POST FREE

FOR DISC BASED SOFTWARE PLEASE ADD £2.00

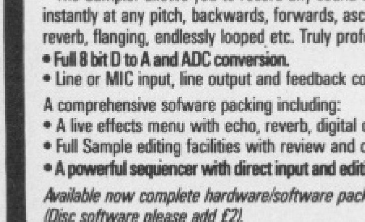
The Datel Sampler now brings you this technology at a sensible price!

- The Sampler allows you to record any sound digitally into memory and replay it instantly at any pitch, backwards, forwards, ascending scale, descending, with echo, reverb, flanging, endlessly looped etc. Truly professional hardware incorporating:
- **Full 8 bit D to A and ADC conversion.**
- Line or MIC input, line output and feedback control.

A comprehensive sofware packing including:

- A live effects menu with echo, reverb, digital delay, flanging etc.
- Full Sample editing facilities with review and on screen frequency plotting.
- **A powerful sequencer with direct input and editing.**

Available now complete hardware/software package. Complete with microphone. (Disc software please add £2).



GUARANTEED SAME DAY DESPATCH ON ALL ORDERS

SEND CHEQUES/P.O's to:

DEPT No: CCI

24 HR CREDIT CARD LINE

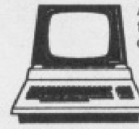
VISA

DATEL ELECTRONICS

UNIT 8, FENTON INDUSTRIAL ESTATE,
DEWSBURY ROAD, FENTON,
STOKE-ON-TRENT
TEL: 0782 273815

128

If you're as **impressed** as we are with the new **Commodore 128**, you'll be even more **impressed** with the new software that's appearing for it now! Already we've got **SuperBase 128** (~~£99.95~~ £85.00!), **SuperScript 128** (~~£79.95~~ £69.95!), and the amazing **VizaWrite Classic 128** (~~£99.95~~ £89.00!)... so watch this space!



Although we are by far **the largest UK retailer** of SuperBase, VizaStar and VizaWrite for the **Commodore 64**, for **over five years** we have supported the best software for **all the Commodore business machines!** So if you have a **CBM/PET 3000, 4000, 8000, 700** or **PC**, then don't forget us... we haven't forgotten you! Why not phone or write for our **CBM/PET catalogue?**

Superscript 64

All the features you'll ever need for **professional word processing**... and then more! Unrivalled **240–column** text handling, **variable width** screen, **word–wrap, cut–and–paste, four–way** scrolling, document linking for **unlimited capacity, global search–and–replace, help screen**, full memory **calculator**, row and column **arithmetic, menu** or **keyed** commands with **command strings, background printing**, complete **letter quality** print control, **spelling checker** with both UK and US **disk dictionaries**, comprehensive **four part** user manual...

OUR PRICE ~~£69.95~~ £58.95! ...WHILE STOCKS LAST!

1st BOOKS

The Anatomy of A Commodore 64	£8.95
The Anatomy of the 1541 Disk Drive	£8.95
Your '64 Cassette Book	£8.95
Tricks and Tips for your '64	£8.95
Machine Language Book for the '64	£8.95
'64 Advanced Machine Language	£8.95
Peeks and Pokes for the '64	£7.95
Commodore 64 Idea Book	£8.95
Graphics Book for your '64	£8.95

Super TYPE

Are you a **two–finger typist?** Then why not let **SuperType** help you learn to **touch–type** the fast and easy way... with your **computer as the teacher!** All the family can learn this useful skill, at their **own pace**... and profit from the very latest computer–aided **training** and **feedback** techniques!

ON TAPE ~~£19.95~~ £16.95!
ON DISK ~~£25.95~~ £21.95!

Superbase 64

Transform your **Commodore 64** into a full featured **professional** database system, with up to **1000** characters per record on up to **four screens**... and up to **128 items** per record, definable as **key, text, numeric, result** or **date**... in files of up to 16 million characters! **SuperBase 64** even has **calculator** and **calendar** functions, **easy input** from word processor or data files, both **menu–driven** and **program** control, **sorting** and **searching**, fully definable **report** and **screen** formats... **Superbase 64** is essential if you want the **most** from your 64! Supplied on 1541 disk with excellent tutorial and reference manual, plus **audio learning** tape...

NOW ONLY ~~£79.95~~ £69.95!

Jetpack

Your programs will really **take off** with **JetPack 64!** 100% compatible with CBM Basic, **Jetpack** compiles Basic programs into **machine code**, running up to **25 times** faster... using **up to half** as much memory! And it even accepts **Basic extensions** and **machine code** routines as well!

WHILE STOCKS LAST... ~~£39.95~~ £29.95!

1st **BUMPER BUNDLES!**

For a **limited** period we can offer amazing savings on top–quality books & software from First Publishing. **Save £60** on Offer No.1 **(FirstWord + First Base + PowerPlan)** for only **£56.95!** Save **£20** on Offer No.2 **(Basic 64 compiler + Assembler Monitor 64)** ...only **£34.95!** And save **£10** on best–sellers Offer No.3 **(Anatomy of the 64 + Tricks & Tips + Cassette Book)**... only **£16.85!** Please allow 5 days' delivery.

VIZASTAR 64

Spreadsheet, database and **graphics** too... all integrated into one amazing package, at an amazingly **affordable** price! The very latest design techniques combine the ultimate in **ease–of–use** with all the sophistication of a fully **integrated** product... **VizaStar's** advanced features include **high speed** maths functions, large **1000** by **64** worksheet, programmability, windows, cell protection, search and sort, text editing, wordprocessor compatibility, simultaneous graphics... integrated with a **1000–character** per record **database**, up to 250 characters per field... the **only** product of its kind for the **Commodore 64!** Suits most printers, supplied with excellent handbook. **(XL8 version now available with a 40% bigger** spreadsheet plus **business graphics**, ~~£129.95~~ **£115.95!)**

OUR PRICE (XL4) NOW ONLY £74.95!

VIZAWRITE 64

A **high–performance, low–cost** wordprocessor, with full **on–screen** formatting, that takes full advantage of the **colour, graphics** and **memory** capacity of the **Commodore 64**... that works with both **disk** and **tape**... and supports virtually **any** printer! With a concise and easy–to–follow user manual, **VizaWrite** is the **ultimate** personal computer word processor! (Available with **VizaSpell**, a 30,000 word disk dictionary and spelling–checker, for ~~£99.95~~ £85.00!)

VIZAWRITE (DISK) ~~£79.95~~ £67.95! **(CARTRIDGE) ~~£89.95~~ £78.95!**

SuperBase Starter (SAVE £10!)	29.95
SIMON'S BASIC (SAVE £15!)	35.00
MASTER 64 (SAVE £30!)	39.00
JETPACK (TAPE)	14.95

EasyScript to SuperScript upgrade– send disk and manual cover	44.95
SuperScript to SuperScript 128	57.95
SuperBase to SuperBase 128	67.95

WANT IT TOMORROW??? CALL US TODAY!!! ON 01–546–7256

Prices include VAT and POSTAGE and are correct on going to press. Order by post or phone, using cheque, Access, Barclaycard or postal order. Despatch is by same day 1st CLASS post. Product data available on request, or phone for advice if in doubt. [REF A35]

ACCESS VISA

Calco Software

LAKESIDE HOUSE, KINGSTON HILL, SURREY, KT2 7QT. TEL 01-546-7256

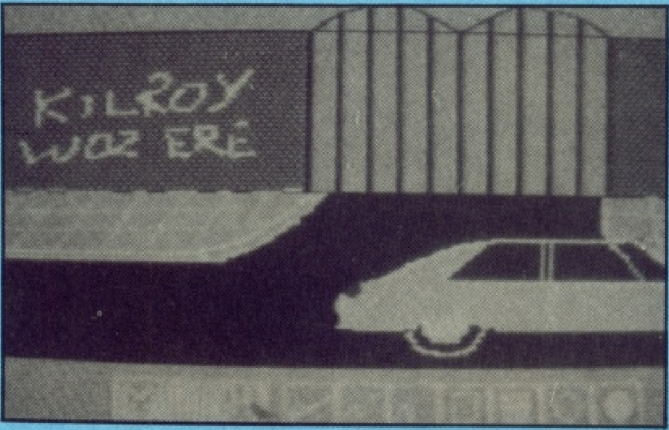
PAZAZZZZZZzzz!

Producing your own theatrical performance on computer? Tony Lydeard finds limited results with Pazazz, while Julian Rosen doesn't fare much better with Screenplay.

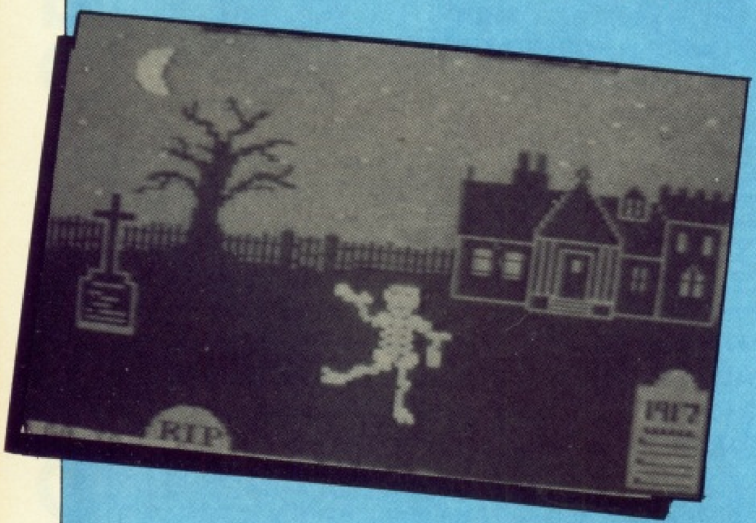
Pazazz

You know those incredibly boring bits of animation that sometimes interrupt the loading of games? Quite clever first time you see them but a Pain in the bum when you have to sit through them time after time? (Super Huey is an example that springs to mind.) With Pazazz you can make your very own clever-but-boring bits to ensure that nobody ever again sits in the same room as you and your computer!

The blurb on the cover of this soporific, disk-only offering from Commodore promises the user the opportunity of directing and producing his or her own theatrical performance. In particular, it offers the facilities of designing scenery and costumes, writing music and choreographing the action. Whilst one cannot actually refute these claims, the reality is not quite up to National Theatre standards.



"Integrated package"



Pazazz is essentially an integrated Graphics, Music and Animation package. It enables you to draw a picture to use as a background for a figure to dance around in front of. The figure is "designed" separately by colouring in a person-shaped template. The animation section allows you to dictate a series of positions for the figure you have previously coloured in. The head, upper arms, forearms, torso, thighs, and shins can all be rotated and the figure itself can be positioned anywhere on the screen – when the sequence of positions (up to 1000) is played back, the figure appears to dance. The Music section allows you to string together a sequence of notes from 5 octaves. Two voices are available, each with a choice of four sounds. A synchronisation facility permits you to fit the movements to the music.

"Works beautifully"

It all works beautifully – although the controls used in the graphics sections are a little idiosyncratic. I had a lot of trouble remembering that the cursor down button scrolled the selection left and that the space bar actioned a command (sometimes – at other times, it was the return key). Some excellent results are possible with a liberal amount of patience.

Background, Figure, Movement sequence and Music are all saved to disk as separate files, making it possible to select different backgrounds or different figures for the same dance, for instance.

"Dreadfully boring"

Four scenarios are included on the program disk to illustrate what can be done with the program and very well put together they are too. The trouble is that what you end up with is so dreadfully boring. No matter how brilliantly the Background, Figure, Music and Dance sequence are designed, the combined result is a single figure dancing in front of a fixed scene. Andrew Lloyd-Webber has no need to feel threatened.

The disk is so heavily protected that it failed to load on a number of occasions. Needless to say, it produced the usual banging and thumping from my poor old 1541. The manual is up to normal Commodore standards – excellently produced and extremely thorough but difficult to find your way around. Overall, I find little to recommend.

Contact: Commodore UK, 1 Hunters Road, Weldon, Corby, Northants, NN7 1QX.

Screenplay

Screenplay, the latest offering by the educational software producers Macmillan Software, is a poor attempt at DIY computer animation.

According to the Blurb on the very eye – catching box, the contents will do no less than enable you to 'Make an exciting programme, just like the professionals!' Anticipation was the first thing to strike me as I opened the package, 'Could this really be possible on the poor Commodore?' I asked myself.

While waiting for the program to load I sat down and read the booklet they had so thoughtfully enclosed in the package. Almost two thirds of the booklet was dedicated to 'How the professionals do it'. In all fairness this part of the booklet gave a very interesting insight into the workings of television, animation, and the tricks that can be acomplished using both.

I was therefore waiting with baited breath for the program to load. After a few minutes the title screen appeared. Alas, fulfilment was not forthcoming. Never mind, thought I, trying with unequalled effort to summon up more enthusiasm than it actually deserved. So I progressed with, what later became apparent, were anything but well documented instructions.

"Icon controlled"

The program is controlled by ICONS, each representing an option. I couldn't help but feel grateful to the authors, as it soon dawned on me that the program was so complex to use that one had enough to worry about without a new command language to learn, or some other such delight many publishers seem to enjoy providing with their software.

After re-reading the instructions, and viewing the 'Demo' provided with the program, which only went further to make the program even more unappetising, I sat down to compose my own production.

"Not convincing"

I encountered many difficulties, which, to my mind, the authors could have expanded their documentation of quite considerably. Such areas as Sprite Design and Background were two of them.

After approximately one hour I was ready, for a few seconds of 'film' time. Now as an enthusiast of animation I can appreciate that much effort, time, and attention is put into a few seconds of film. But this was not film, just my humble micro, and to be honest nothing but film can really capture the true magic of animation.

Consequently, by piecing together numerous 'takes' as they have so originally called them, I wasted an hour on a few seconds of sprite movement, accompanied by some simple music played on one voice, and some scattered background hi-resolution sketchs, none of which were particularly convincing.

To summerise, Macmillan Software have tackled the decidly unmanagable task of 'DIY Animation' with the best results one could hope for. I could not recomend this product to anyone, basically because I feel it gives entirely the incorrect impression of what animation should be like. The booklet provided gives quite a detailed insight into the world of film, perhaps too much so, the complexities of the program were not aided by the briefness of the instructions. A verdict?, All that glitters is not as good as it may appear!

Music Software.

Music made easy on your Commodore.

☐ £19.95

Music Keyboard Overlay
Turns the Commodore 64 into a marvellous musical instrument. Music Maker enables the user to create electronic sound effects or synthesize dozens of instruments – even become a recording artist. Contains everything needed to make music right away: Music Keyboard overlay: easy to understand software program with pre-programmed songs for instant enjoyment: songbook and music tutor with 28 famous popular songs, featuring music notation for those who can and cannot read music; complete user's guide to the Music Maker program. Packed in handsome full-colour gift box. With disk or cassette. **£19.95**

MIDI COMPATIBLE

☐ £69.99

Sound Sampler
Can be used to record voice or sounds which can then be played back higher or lower in pitch, reversed, edited or looped. Can also be used as an Echo Chamber, pitch converter or drum machine. Comes complete with microphone. **£69.99**

Sound Expander
A sound module using the lastest digital technology to produce high quality synthesized sounds e.g. vibraphone, electric piano, flute, playable up to 8 notes at a time, plus Rhythm accompaniment and easy play features. **£99.99**

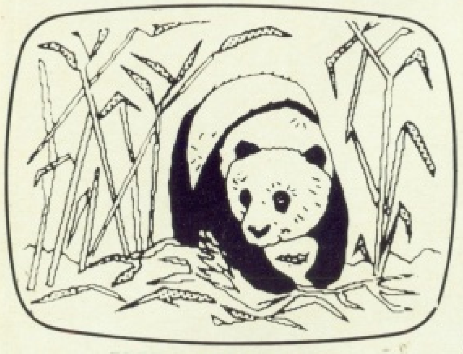
☐ £14.99

Sound Studio – Professional Synthesizer and Recording Studio
Record music on three tracks (6 tracks with MIDI) either note by note like a word processor or in 'real time' as you play it on the keyboard. Play it back and 'Edit' if necessary. The synthesizer turns your computer into a sophisticated polyphonic synthesizer, with full control over all the usual sound parameters. **£14.99**

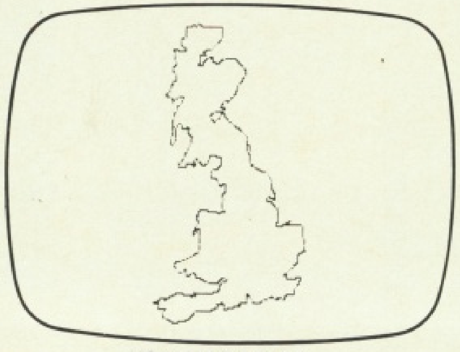
To: DIRECT MAIL MUSIC, 627-631 HIGH ROAD, LEYTONSTONE, LONDON E11 4PA
Please send me the items shown above. I enclose a total of £ by cheque ☐ postal order ☐
(tick which applicable), which includes postage and packing charges.
VISA/ACCESS Telephone: 01-539 3048

Postage/Packing charges: £1.95. Please allow up to 21 days for delivery (BLOCK CAPITALS PLEASE)
NAME
ADDRESS

HIGH-RES GRAPHICS AT LOW-RES PRICE



FREE-HAND DRAWING ICON SOFTWARE



USING GRAFPAD FOR TRACING

GRAFPAD II–

THE ULTIMATE IN GRAPHIC INPUT DEVICES

FOR THE COMMODORE MICROS

The first low-cost graphic tablet to offer the performance and durability required for business, industrial, home and educational applications. It's small, accurate and reliable. Needs no adjustment or preventive maintenance. **GRAFPAD II** is a unique product that brings the power of modern technology under the control of the user.

GRAFPAD II:

- A brilliant British invention manufactured in Gt. Britain, unequalled in the world of graphics input.
- Ferranti's space age technology makes the Grafpad II unique in its digitising technique.
- The culmination of 3 years of advanced research to create a final graphical solution for the world computer market.

IT COMBINES IN ONE DEVICE ALL THE FACILITIES OF PREVIOUS ATTEMPTS AT INPUT DEVICES. THE APPLICATIONS ARE AS NUMEROUS AS THAT OTHER COMMONLY HELD DEVICE – A PEN! – AND INCLUDE:

● Option Selection ● Form Input ● Data Collection ● Logic Design ● Circuit Design ● Picture creation ● Picture storage ● Picture retrieval ● Construction design ● C.A.D. ● Text Illustration ● Games ● Pattern Design ● Education ● PCB Design

- **A4 SIZE DRAWING AREA**
- **HIGH RESOLUTION COLOUR**
- **HOME AND BUSINESS USE**
- **VARIETY OF OPTIONAL PROGRAMMES**
- **FREE HAND DRAWING**
- **CIRCUIT DIAGRAMS**

- **C.A.D.**
- **PCB LAYOUTS**
- **EASY TO USE**

FREE ICON DRAWING SOFTWARE WITH EACH GRAFPAD II

£59.50 inc. VAT

Available from most Computer dealers or direct from Grafsales Ltd.
Unit 8, Derby Works, Carey Place, Watford, Herts, WD1 2LR.
Tel: (0923) 43942. Telex: 946024 Open: Mon-Fri 9-5. Sat 9-12.30.

SPECIFICATION

Resolution:
1280 x 1024 pixels

Repeatability:
1 pixel

Output rate:
2000 co-ordinate pairs per sec.

Interface:
parallel

Origin:
LH corner or selectable

Dimensions:
350 x 260 x 12 mms.

EXPORT AND DEALER ENQUIRIES WELCOMED

TO: GRAFSALES LTD.

Unit 8, Derby Works, Carey Place, Watford,
Herts, WD1 2LR. Tel: (0923)48222 Telex: 946024

Please supply ____ GRAFPAD(S) II at £59.50 plus £2.50 p&p (or £8 insured delivery)

NAME: ________________

ADDRESS: ________________

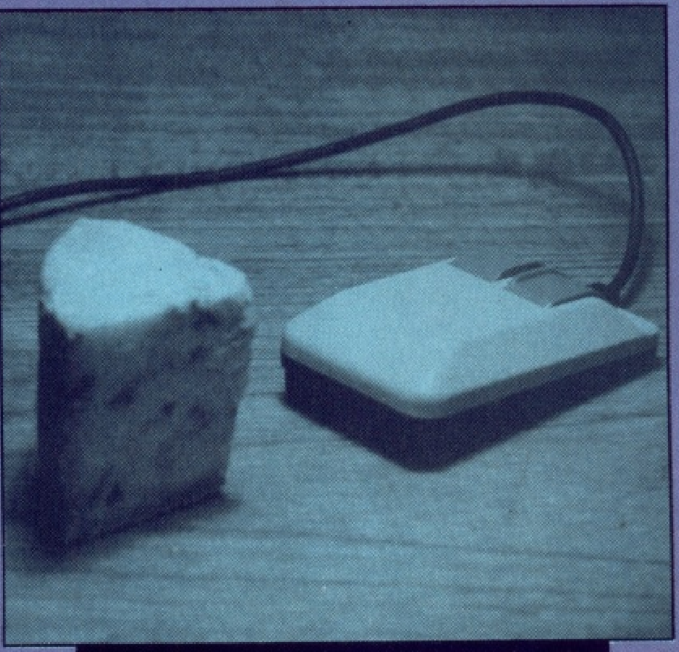
Cheque enclosed value £ ________

You can pay by credit card or telephone your order (24 hour ordering service)

Visa			
Access			

An Artistic Rodent

Say 'cheese' and you're looking at the latest graphics mouse. Tony Lydeard enthuses over its features and ease of use.



Just in case there is anyone left who doesn't know what a mouse is, it's a little gizmo which moves a cursor around the screen corresponding to its own movement around the table top. They have become inseparably associated with icon-operated software – a purpose for which they are ideally suited. Icons are little pictures on the screen. Moving the cursor the little picture activates that part of the program which icon illustrates.

The MS 2000 from Wigmore House is conveniently sized to fit the palm of the hand and is provided with 1.2 metres of flex – quite sufficient for its purpose. Its rubber-coated metal ball responded perfectly on all the surfaces I could think of and the push buttons have a good positive "click" to them. Cursor response is excellent.

The icons in "Cheese", the Graphics software that is supplied with the Wigmore mouse, are ranged along the bottom of the screen alongside two numbers which give the X and Y coordinates of the cursor position. The coordinates are reckoned from the top left hand corner of the drawing area and give a unique identification to each pixel available to the artist. The "canvas is 159 pixels across and 167 deep, with an additional 136 rows available by use of the scrolling function.

"Icon-driven"

The first group of three icons depict a cat's head to represent the Undo function (i.e. cancels the most recent operation), a regular pattern (one of 32 available) which is used in the various Fill functions, and a rabbit's head. The latter cycles three sets of seven icons in the adjacent group. When a function is actually being used, the group of seven icons is replaced by a colour grid and either an inkpot or a pencil, the colour of which determines that of the trace or cursor respectively (the aforementioned rabbit's head is replaced by the icon of the function in use).

As with most Graphics software, there is the facility to draw freehand in a variety of thicknesses and textures of line. The degree of control when trying to do this with a joystick is minimal, as anyone who has tried will testify. With the MS 2000 it's a doddle – you just write or draw on the table and the mouse transfers your efforts directly to the screen. A minor niggle here – the MS 2000 uses an area of just 50mm x 45mm to deal with the available screen area. I would personally have preferred slightly less sensitivity.

There are also the normal line and rectangle functions, the latter utilising the "rubber band technique of defining the opposing corners. The circle function is a little unusual in that it is really an ellipse function – you define the centre of the ellipse and then the major and minor axes with a "rubber band. If you want a circle you have to make sure that the rectangle is a square – if you see what I mean!

"Ellipse function"

Cheese does not have the "ray" function that some programs offer but then it doesn't really need it as the starting point's coordinates can be memorised.

Interesting features include a Reverse facility, which enables predetermined areas of the screen to be "flopped", either laterally or longitudinally; a Mirror function, which reflects your drawing in the other half of the screen as you draw (the "other half of the screen" can be defined in any four ways, which can be used simultaneously if required); a Copy function, which enables a predefined rectangular area of the screen to be reproduced, and a Tile pattern. The tile feature enables areas of the screen to be filled with one of 32 different repeated patterns (my second minor niggle comes in here – if you overshoot the pattern you want, you have to cycle through all 32 again as there is no reverse).

Your works of art can be saved to disk or tape, depending on which version you obtain or printed out on a Commodore printer. Both worked well although I could have done with a few more disk functions. The copy I have been using was a preproduction one adapted from the version, so perhaps the version will have improved.

"Good value"

At £64.50 for the tape version or £69.00 for disk, MS2000 isn't cheap. To my mind, however, it is good value. The hardware, as I mentioned earlier, is sturdy and reliable. The ball can be removed for cleaning, which is a sensible feature. The software is simply the best graphics package I have come across. The word-processed manual leaves a lot to be desired but it does explain how to work the thing. The only serious shortcoming I found was the lack of information on how to incorporate mouse control into your own programs or to use your illustrations indepently of the generating software.

If you're saving up for a Graphics package, I would strongly recommend saving a little longer in order to get your hands on the Wigmore mouse – it's triffic!

Contact: Wigmore House Ltd., 32 Savile Row, London W1X 1AG. Tel 01-734 0173.

six-four supplies company

p.o. box 19, whitstable, kent ct5 1tj

128 64 PLUS-4 C16 SOFTWARE There are just too many items for the Commodore range of computers for us to list here. We can supply software for the 128, 64, Plus4 and C16 which embraces home, business, personal, recreational and educational uses. In short: if you see a product advertised or reviewed – or are simply after an old favourite – please at least try us out, or simply ask us what is available. We have a worldwide customer base of thousands, with many 'regulars' who we are happy to help and advise. Why not join them? Send now for our lists (A5 SAE).

FREE ADVICE – Ask before you buy. If, for example, you are thinking of using your computer for business purposes it can be foolhardy trying to achieve the impossible by using entry-level 'hobby' software. Likely as not this will put you off 'computerizing' for good and may have very serious repercussions as well! We can advise you on the selection of suitable software – and that doesn't mean el-cheapo outdated stock which some people have rather a lot of on their shelves! If we have to order it specially for you, we will – or direct you to a competent supplier. There's no commitment to buy from us – but as we offer continued specialist aftersales support, perhaps you'd be wise to do so! 'Quickie' questions by 'phone, others by letter please.

LOW / LOWER / LOWEST PRICES! Found a low price? Well, we'll try to match or better any advertised price. But as we believe service and future support must be considered as a price component, this offer is restricted to what may be described as 'serious' software only. On certain products we provide a unique one-month **PRICE PROMISE** which credits you with the difference if you find goods on regular sale elsewhere at a price lower than you paid. Must be worth a 'phone call: it could save you £££ ! Full details available.

ORDER IN CONFIDENCE: Same-day first-class despatch for stock items. Letters to PO Box19 Whitstable, Kent CT5 2AN. Or make an Access/Visa order by 'phone (24-hour, partly manned):

Telephone Orders:	(0227) 266289
Compunet Courier ID:	JPW2
Telecom Gold Mailbox 72:	DTB10183
Telex:	265871 MONREF G

C16 / PLUS-4 SOFTWARE – An increasing number of recreational and utility titles available for these machines. For the Plus-4, business software includes the incomparable SuperBase.

64 IMPORTED SOFTWARE – We can offer a full range of US-sourced software covering business and leisure interests. There are new low prices on some of the now large range of Infocom adventures (for example HITCH-HIKER'S GUIDE at d24.95). New titles will include JET (d45.00) and there are old favourites such as its incomparable predecessor FLIGHT SIMULATOR II (d45.00 c40.00). New for wargamers are further titles in the Strategic Simulations Series. Price match promise on all available US-sourced software.

PRECISION SOFTWARE – We are justifiably enthusiastic about this particular range of software. If you are after wordprocessing for the 64 or 128 the most versatile program of its type is SUPERSCRIPT. On the 128 this wp program offers 40/80 column display, and two working text areas or room for SUPERBASE. The latter is arguably the best database management program available on any home computer – usable for almost any leisure or work activity where information storage and manipulation is required. The built-in database on the Plus-4 can best be described as pathetic in comparison: if you bought this machine for business use, you really ought to buy Superbase. Learning to type? Why not teach yourself at your own pace using SUPERTYPE? Best of its type on the 64. Please 'phone for latest prices on this Precision software.

128 CP/M SOFTWARE – Want to learn to use WORDSTAR and thus gain a very valuable employment skill? Or maintain familiarity with a program you have used at work such as dBASE II? Whatever your reasons for wanting CP/M, now there's 'big name' business CP/M software available specially formatted for the 1570 and 1571 (state drive). Includes products from Ashton-Tate, Microft, MicroPro, Microsoft, Ryan-McFarland, Sorcim, Sagesoft and others. A full selection of business and recreational software available for other computer types as well (state requirements and machine type). Specialist 'bespoke' applications software also available for many different types of business.

DISCOUNT CLUB – We value regular customers and for these we offer a special discount scheme which gives worthwhile discounts for all types of software, regardless of machine type. So no problems if you change machines or decide to order for your friends or business colleagues. There's a minimum purchase requirement (six items at our normal prices) OR payment of an annual £10 registration fee – so it's not expensive. And savings can be considerable: at least 15% and sometimes much more. Full details available.

BARGAIN BIN – Ask for our special list of software of all types at real bargain prices.

CATALOGUE – A much-revised catalogue describing in some detail the thousand-odd items of software, related peripherals and books for the entire Commodore range is nearing completion. There's sure to be a huge demand so apply now and you will be advised when it is ready (SAE please). To partly off-set costs there will be a charge for the catalogue but it will be free to all customers placing past, present and future orders totalling £25 or more in value.

GET IN TOUCH WITH US NOW!

0227 266289

JORETH music

MIDI Synthesiser Control

with the COMMODORE 64

- **JORETH MUSIC COMPOSER SYSTEM**
  8 track, 6000 note, step/real time MIDI Controller with SCORE WRITER, MIDI & non-MIDI sync and expanding range of software additions.
- **TONE EDITOR for CASIO CZ synths.**
  Sound editing with full envelope graphics, in built sequencer and disc filing.
- **PART LOADER**
- **KEY PROGRAMMER**

☎ JORETH HOTLINES ☎

LONDON & SOUTH EAST REGION

Rose Morris	01 836 0991
Syndromic Music	01 883 1335
Take Note	01 267 6813
Ian Henry	0582 570690

NORTH WEST REGION

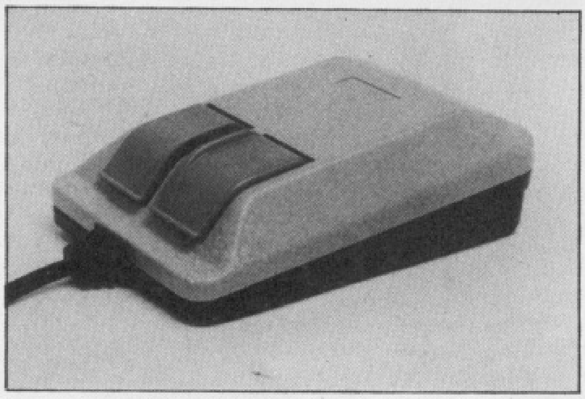
Bar Enterprises	092 52 7753

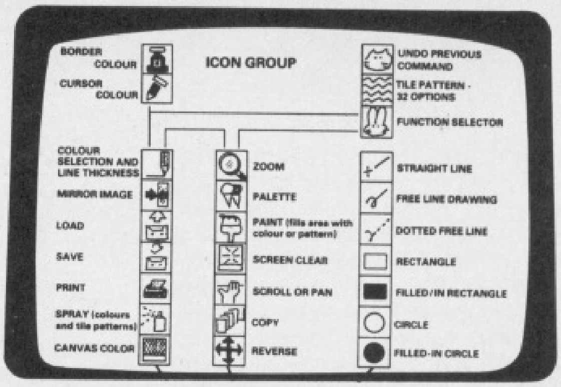
MIDLANDS & TRADE ENQUIRIES

Joreth Music	0386 831615

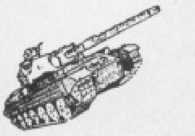
or write to: PO BOX 20, EVESHAM, WR11 5EG.

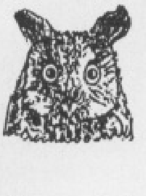
MS 2000 COMMODORE MOUSE





The MS 2000 is a beautifully designed peripheral used to move the cursor simply and quickly around the screen like a drawing pen, paint brush or air spray. This popular device is so natural and friendly to use that it will add an exhilerating new dimension to creative art, CAD, design and business drawings such as graphs, pi charts and plans. Full 16 colour simultaneous drawing and painting facility.





The MS 2000 is a high quality mouse with a RUBBER COATED BALL which is quiet and will not lose accuracy through slippage. The hardware incorporates an OPTICAL ENCODING technique in the mouse which has a resolution of 100 points to the inch. It is accurate, reliable and repeatable.

ONLY £64.90 INCL. MS2000 + CASSETTE. DISK OPTION £3.50 (£1.50 p&p)

Compunet **"must be the best"**
Popular Computing Weekly **"hardware excellent, software technically stunning"**
Commodore Horizons **"certainly the best Mouse for the C64"**

WIGMORE
HOUSE LIMITED

32 Saville Row, London W1X 1AG.
01-734 0173 – 01-734 8826

Dealer & Export Enquiries Welcome

Can you find...
The Real You?

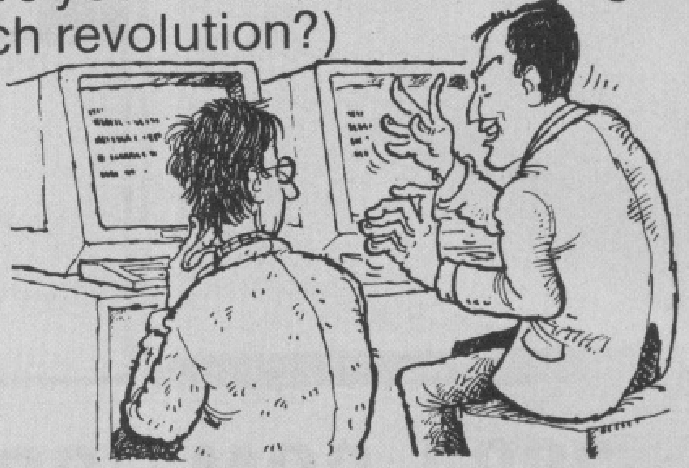
Ever wondered who and what you really are? Now is your chance to find out with this program 'based on major tests'. Sue Pearce investigates

"Only you need know how odd you are", states the introductory blurb to this package. How reassuring!

The 'privacy' offered by the computer is often one of the biggest selling points of programs which promise revealing information about yourself as a result of sometimes intimate questions. The thinking behind it is that the user will give a more honest answer to questions if there is no-one to see the results but themselves.

However, do people really regard the results dished up by computer as gospel? How many people want to find 'the real you'?

HI-TECH
(Are you in touch with the high-tech revolution?)

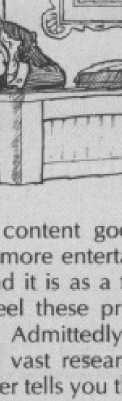


SATISFACTION
(Are you satisfied with your job?)

As far as program content goes, this package is one of the more entertaining I have come across. And it is as a form of entertainment that I feel these programs should be regarded. Admittedly, most claim to be based on vast research and tests, but if the computer tells you that you are compatible with that partner you have been so happy with for the last 10 years, I wouldn't leave them as a result!

The Real You contains 16 tests taken from a Dr Michael Nathenson's The Book of Tests. The program is divided into six sections covering important areas of your life: work, intellect, personality, lovelife, anxiety and views.

BODY
(Are you satisfied with your body?)



STRESS
(How much stress do you have in your life?)

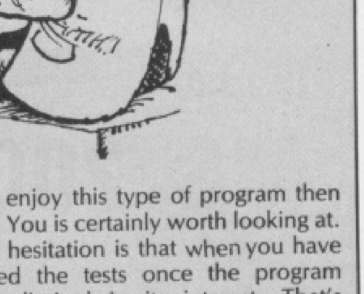
Each section is made up of a series of questions. The screen display for each question is made up of two or three windows. The top window contains an instruction on how to answer each question. The central window contains the question or picture, and the lower window contains the responses from which you are must make your selection. You respond to each question via the cursor keys or a joystick, whichever is your preference.

A score is displayed in the form of a bar on a scale on completion of each test. This shows the minimum and maximum scores possible and your score as compared to the population in general. It's then back to the book to read the analysis.

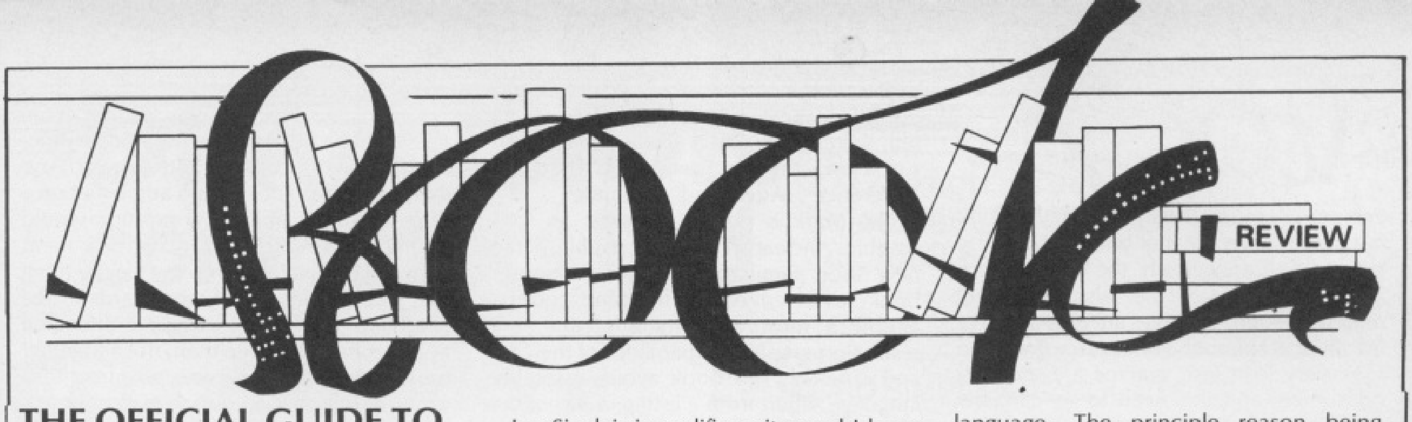
If you enjoy this type of program then The Real You is certainly worth looking at. My only hesitation is that when you have completed the tests once the program becomes limited in its interest. That's assuming you don't cheat and enter different responses each time. Admittedly you can test yourself against friends and relations – but will you want them to know the details of your sex life?

So, at the end of all these tasks (and an enjoyable afternoon trying to prevent the rest of CCI peering over my shoulders to discover my sordid secrets) am I who I thought I was...well, that would be telling wouldn't it?!

RELATIONSHIPS
(Are you and your partner likely to succeed?)



Published by COLLINS SOFT
8 Grafton Street, London W1X 3LA



THE OFFICIAL GUIDE TO OXFORD PASCAL,by I Sinclair – £7.95

PASCAL is a very popular language with the professional programmers as well as the universities of this country. Very few people at this level bother with BASIC and a working knowledge of PASCAL is necessary if you wish to aspire to a career as a programmer or just collect a degree in computer science. The main value of PASCAL lies in the technique of how programs are built as well as the ease of portability across to other machines. PASCAL is highly structured and I must admit from personal experience the spaghetti-like nature of BASIC is very frustrating to take at times, particularly when trying to follow a BASIC program written by someone else. It is difficult to leave an imprint of personal programming style with PASCAL as opposed to BASIC, but in general I avoid BASIC whenever possible.

I am a long time fan of COMAL which shares the best features of PASCAL and BASIC and I would recommend this as a convenient route to PASCAL. In fact, given my way I would like to see the end of BASIC as the de facto standard – certainly as far as Commodore machines are concerned – and replaced by COMAL. It may be the fate of the Jupiter ACE that puts manufacturers off from implementing another resident language, (the ACE took the brave step of using FORTH as resident which really was a little over the top).

One of my interests in personal computers extends to programming languages and although I would freely confess to weaknesses in some languages, I do enjoy having a dabble whenever possible. I have always liked Oxford PASCAL since it is the most accurate implementation for the C64, the only limits being the hardware in terms of memory or disk access speeds. Nevertheless if you are serious about acquiring programming skills then PASCAL is worth learning. The only shortcoming of Oxford PASCAL is the supplied literature in the form of a booklet, which was very light on the subject. Yet this fault could not be laid at the door of Oxford Computer Systems Software Ltd, since they are mere suppliers of compilers and not language teachers. So, having bought your Oxford PASCAL compiler there was an immediate need for a book on three important aspects; one, learning how to fully use the compiler itself, secondly, how it works in terms of the features of the C64 and thirdly, a practical introduction to PASCAL.

Ian Sinclair is prolific writer and I have always found his works to be very readable. I fear though that in this book he has attempted to cover too much ground. He has made a major effort to cover everything commencing with a 'how-to' approach to programming in PASCAL and really leaving the most useful matters until the final chapter which is entitled "Assortment". The author takes the reader through the various nuiances of PASCAL such as procedures, types and string handling before skimming lightly over the surface of the C64's sound and graphics abilities.

Admittedly one of the strengths of PASCAL lies in its portability between machines, although at the C64 level it is unlikely that someone will want to use this machine as a vehicle for PASCAL software development. What I would have really liked to have seen is more and longer PASCAL programs, rather than the short and simple ones in the book. Maybe Ian has another volume up his sleeve which will assume PASCAL literacy and concentrate on the features of the C64. He does make it clear in this book that one of his aims is the coverage of features suitable to most readers, so perhaps my thoughts are those of the minority.

This book is certainly worth buying if you have purchased Oxford PASCAL already, for whilst the manual supplied by Oxford with the compiler is adequate, it would be unfair and unrealistic to assume a full blown tutorial on PASCAL for the price you have paid to Oxford. It really should be regarded as a continuation of the user manual, so we wait with bated breath for a definitive programming book on C64 PASCAL.

The book itself consists of about 160 pages which breaks down into nine chapters, an appendix and index. No complaints bout the typesetting or general quality of this book, although the price seems to be slightly in excess of what I would like in terms of the total number of pages. Recommended.

COMMODORE 64 ASSEMBLY LANGUAGE ARCADE GAME PROGRAMMING, by S Bress – £14.20

It has long been accepted that to produce reasonable games on the C64 which use the full features of the machine, the programmer has to resort to assembly language. The principle reason being speed of execution since a game contains many elements, sound, graphics and arithmetic functions all of which can be done using BASIC but which would take hours to fulfill. Another route using a compiled language such as PASCAL or the halfway houses of FORTH or COMAL. Probably FORTH is the next best choice to assembly language and this is the approach taken by Oasis Software in their excellent 'White Lightning' package. Quite why assembly language causes so much fear amongst users is a mystery to me; yes it looks difficult but, like riding a bicycle the hardest part is actually starting off.

This book uses the technique which is now common in a lot of programming books originating from the USA. The listings are provided in pure assembly language for those users who have a assembler, hex dumps for monitors only and BASIC loaders for the poverty stricken. The last two methods are not really serious options unless you are a demon keyboard operator and have plenty of time. The book however is essentially assembler orientated and specifically the Commodore Macro Assembler Development System. The reason for this becomes apparent on delving further into the text, the programs make great use of macros to speed things up and cut down the amount of typing. If your assembler does not support macros this does not preclude the programs entirely, but just means repetition. I was particularly pleased that CBM assembler was supported, apart from the fact that this is the one I use and like, the macro options have always been a little mystifying, courtesy of the ever helpful Commodore documentation. I understood how a macro worked but not how to use the facility, this book explained and showed me how.

Don't run away with the idea that this book will turn into a Crowther or Minter clone overnight, it won't. What it will show you are the elements of constructing arcade games. The sound and graphic features of the C64 are covered relatively well and with the help of other source books you should come up with something that will at least impress the family and friends. The magic ingredient of originality is left up to you and the mechanics of how the C64 operates such as bank-switching, raster interrupts and other machine dependant properties are well covered.

The book provides the purchaser with a very useful macro library of routines which, although directed towards games are food for thought in terms of utilities.

Personally I found the strength of this book not in the subject matter but in how to use macros and specifically the Commodore Assembler. Beware the false beauty of macros though, variables are only effective locally and although your source code can look very lean fast, macros are memory consuming and this need to be carefully watched in size restricted areas such as that old favourite, the cassette buffer.

As well as providing a full listing of two arcade games for the patient reader to type in, there is also a full discussion of another of one of my favourite tools, the Koala Pad. The book includes unpublished details on Koala graphics such as relocating the high resolution screen and file transfer, both into and out of Koala screens. Very useful.

My only complaint about this book was the program listings have not been typeset and are left in dot-matrix. It happens that the printer used by the author looks as if a new ribbon would have been helpful but the book publishers have to offset legibility with the program accuracy and I'm all in favour of the latter. For 260 pages, the book is value for money. Recommended.

COMMODORE 64 COLOR GRAPHICS: AN ADVANCED GUIDE, by Shaffer – £14.50

The title of this book was a little ambiguous in the use of the word Advanced, but so many books now use this ploy in order to sell themselves that I always view with suspicion the inclusion in the title 'Reference', 'Advanced' or 'Guide'.

The book is part of a series on C64 graphics, the earlier on being pitched at the new user. Similar to the arcade games book reviewed earlier machine code is almost a must when utilising the high resolution graphics capabilities of the C64 and curiously this book avoids assembly language, apart from a listing in Appendix D, and the programs are entered as BASIC data statements. If there is one thing more boring than waiting for a cassette to load, then it must be keyboard entry of ream after ream of data statement numbers. I certainly find keying in an assembly language program provides a lot more interest than keying just pure numbers, even when I don't understand the function of the program. I am sure that a lot of young, potential machine code programmers never progress beyond BASIC because they imagine assembly language consists purely of bare numbers, and who can blame them.

Where this book did prove interesting was in the explanations of the mathematics of object rotation. I don't know about you but I have grown rather tired of graphics books that provide grid designs of aliens, monsters and other general science fiction pap. Exploring the ins and outs of polar and cartesian geometry is not my idea of a happy pastime, but like most aspects of mathematics, put it into a frame of reference that is relevant to the reader and yes it immediately becomes of use and value.

Even more interesting was the all-to-brief exposition on colours and how to use them. At this point I should admit that on a scale of artistic ability my position would be the next one up from matchstick men. Before the C64 came into my life the thing that I could draw well were cards in the gambling schools whilst attending polytechnic, and even then, not altogether too consistantly! The concepts of contrast in using different colours was completely new to me and provided some fresh ideas in this vein.

I found the programs within this book were to a high standard and although they worked very well at a definite level of user-literacy certainly not that suggested by the title. In fact I have a sneaking idea that there is another book yet to come. In one sense the book was insipid; looked at another way, there was some new material, not so much connected with the C64, but with the fundamentals of graphic art. This book really stumped me for a recommendation, since it falls between the two stools of the machine and the subject. I fear that there is little more to be uncovered and wirtten about in terms of the C64 hardware facilities but there is a need for a book dealing with the day-to-day applications of the C64's graphical abilities. This book went forward a little in the direction of the latter; I would like to see more. The use of only two printed colours was restrictive bearing in mind the price, although there are 310 pages. Examine the contents of this book carefully before you decide.

BILL DONALD

MCT
ESTIMATOR

Professional estimating package designed for use in small businesses employing A BBC B or CBM64 micro computer, disk drive(s) and TV. A dot matrix printer would be a distinct advantage. The program should save up to 75% of the time normally spent on job costings.

Our nearest competitor costs 10 times more!

Soon available on the Plus/4 and the 64K Expanded C16

£29.95

COMMODORE C16

64K RAMBOARD

No soldering or cutting of tracks. Disables internal 16K and provides 60671 bytes free to Basic

£49.95

Please direct enquiries/orders to:-

MICRO COMPONENT TRADING COMPANY
Group House
Fishers Lane
Norwich
Norfolk

VISA

Telephone: (0603) 633005

TROJAN
CAD-MASTER
THE ULTIMATE IN GRAPHICS TOOLS

SUPERB GRAPHICS SOFTWARE
PLUS
A TOP QUALITY LIGHT PEN

Discover the exciting world of creating your own graphics on screen.

- FREEHAND DRAW - 5 pen thicknesses inc. Quills
- PAINT BRUSH - for the artistic touch
- FILL ANY SHAPE - use 16 colours and 11 patterns.
- GEOMETRIC SHAPES - circles, boxes, triangles, lines & banding.
- DYNAMIC RUBBER BANDING on all geometric options.
- PIN-POINT FUNCTION - for pixel accuracy on all functions.

Plus many more too numerous to mention in this ad. All these features in the Program + a top quality Light Pen and an Instruction booklet in one reasonably priced package. Easy to use for creating colourfull pictures or technical drawings. Ideal for use by all ages of micro users. Full back-up service from manufacturers. Available at good dealers or direct from Trojan Products.

ONLY £19.95 per pack.

TROJAN
Micro Computer Software & Accessories
Send cheque/P.O. to.
TROJAN PRODUCTS
166, Derlwyn, Dunvant, Swansea SA2 7PF
Tel: (0792) 205491.
TRADE ENQUIRIES WELCOMED

DIMENSION computers l.t.d.

27/29 High Street
Leicester LE1 4FP
Tel: (0533) 57479

THE MIDLAND'S LARGEST HOME COMPUTER STORE

commodore

PRINTER + SOFTWARE OFFERS

COMMODORE MPS 801
DOT MATRIX PRINTER £129.95*

COMMODORE MPS 803
DOT MATRIX PRINTER £139.95*

COMMODORE DPS 1101
DAISY WHEEL PRINTER £229.95*

STAR SG10C
DOT MATRIX PRINTER
with near letter quality mode £279.95*

*The above prices include:
EASYSCRIPT WORD PROCESSOR, EASYFILE DATABASE, FUTURE FINANCE PLANNING PACKAGE.

COMMODORE DRIVE OFFER

1541 DISC DRIVE — £149.95

Including Super Zaxxon and Ultima III games discs.

COMMODORE 128 OFFER

COMMODORE 128 — £269.95

with FREE C2N Data Recorder,
Quick Brown Fox Wordprocessor Tape and
Practicalc Spreadsheet Tape.

COMMODORE 128D

with built-in 1571 Disc Drive **£499.95**

UTILITIES
SIMON'S BASIC EXTENSION
Adds 91 commands to Simon's Basic Cartridge.

Disc or Tape	~~£19.95~~ —	£12.95
PROGRAMMERS UTILITIES DISC	~~£14.95~~ —	£9.95
INTRODUCTION TO BASIC. Tape or Disc	~~£14.95~~ —	£9.95

PRODUCT ENQUIRY HOTLINE

PLEASE RING FOR DETAILS OF THE WIDE RANGE OF HARDWARE, SOFTWARE AND PERIPHERALS AVAILABLE VIA OUR MAIL ORDER SERVICE.

COMMODORE 1901 COLOUR MONITOR	**£299.95**
Commodore MPS 801 Printer (without software)	£99.95
Commodore MPS 803 Printer (without software)	£119.95
Commodore 64/128 Green Screen Monitor	£99.95
Commodore 128	£269.95
Commodore 1570 Drive	£199.95
Commodore 128 + 1570 Drive	£449.95
DPS 1101 Daisy Wheel Printer (without software)	£199.95
Pair Quickshot II Joysticks	£14.95
Currah Speech 64	£19.95

PERSONAL CALLERS AND EXPORT ENQUIRIES WELCOME
ALL OFFERS STRICTLY SUBJECT TO AVAILABILITY.

MICRO SIMPLEX ACCOUNTS OFFER

The most powerful yet easy to use Accounts and V.A.T. package produced for Commodore micro's includes the following features:

★ Analysis of Receipts ★ Profit and Loss Account ★ Current Bank and Cash Balances ★ Unpaid Bills Record ★ Quarterly V.A.T. Record ★ Supports V.A.T. Schemes A to F ★ 50 Expenditure Analysis Headings ★ Periodical Income and Expenditure Reports ★

Complete with comprehensive manual and optional user club membership form. ~~£172.50~~ — £99.95

PRECISION		
Superscript 64, Disc	~~£69.95~~ —	£49.95
Superbase 64, Disc	~~£99.95~~ —	£59.95
Superscript + Superbase 64, Disc	~~£169.90~~ —	£99.95
Supertype (Typing Tutor), Disc	~~£25.95~~ —	£22.95
Supertype (Typing Tutor), Tape	~~£19.95~~ —	£17.95
Superscript 128, Disc	~~£89.95~~ —	£74.95
Superbase 128, Disc	~~£99.95~~ —	£79.95
Superscript + Superbase 128, Disc	~~£189.90~~ —	£139.95
COMMODORE		
Easy File (Database), Disc	~~£50.00~~ —	£19.95
Future Finance (Planning Package), Disc	~~£75.00~~ —	£17.95
Easyscript (Word Processor), Disc	~~£75.00~~ —	£24.95
AUDIOGENIC		
Wordcraft 40 (Wordprocessor), Cartridge	~~£99.95~~ —	£24.95
Magpie (Database), Cartridge + Disc	~~£89.95~~ —	£24.95
HANDIC		
Easycalc (Spreadsheet), Cartridge	~~£49.95~~ —	£14.95
Diary, Cartridge	~~£29.95~~ —	£9.95
Calc Result Advanced (Spreadsheet), Disc + Cartridge	~~£99.95~~ —	£39.95
PRACTICORP		
Inventory (Stock Control Package), Disc	~~£29.95~~ —	£14.95
Practicalc (Easy to use Spreadsheet), Disc	~~£44.50~~ —	£17.95
Practifile (3800 Record Database), Disc	~~£44.50~~ —	£17.95
64 Doctor (Hardware Diagnostic), Disc	~~£19.95~~ —	£9.95
64 Pack (Unique Applications Pack), Disc	~~£14.95~~ —	£9.95
Practicalc II — Advanced Spreadsheet with Database/Wordprocessing facilities, Disc	~~£69.95~~ —	£49.95
Logo + Pilot (Educational Languages), Disc	~~£64.90~~ —	£14.95
Quick Brown Fox (Wordprocessor), Disc	~~£60.00~~ —	£9.95
Quick Brown Fox (Wordprocessor), Tape	~~£60.00~~ —	£9.95
Practicalc (Spreadsheet), Tape	~~£39.95~~ —	£9.95

Please add £1.00 towards carriage + packing on any software order, or hardware order under £40.00, and £5.00 Carriage on hardware orders over £40.00
To order, either send cheque/P.O. with coupon or ring *(0533) 57479/21874* with Access/Barclaycard number.

Send to: Dept. No. CCI3, Dimension Computers Ltd.,
27/29 High Street, Leicester LE1 4FP.

ITEM	QUANTITY	PRICE
	TOTAL	

Name ....

Address ....

....

Telephone ....

PLEASE ALLOW 7 DAYS FOR DELIVERY

Win a
Max-Pack!!

Following his success in the film and television series, Max Headroom is now the star of a computer game.

You could be one of the first people to play the game by entering CCI's Max Headroom competition. In addition to the game, we're giving away Max Headroom books and the video!

All you have to do is answer four easy competitions and a Max-pack could be yours.

The Competition

Below are four easy questions to answer. If you haven't seen the film, the TV series or read the books (where have you been, and do you know what you're missing?), you may well find some clues in the Max Headroom feature on page 28.

The Prizes

1st: Two Max-packs of the video; Max Headroom's Guide To Life; Max Headroom – the book of the film; and the game.

2nd: Three Max-packs of Max Headroom's Guide To Life; Max Headroom – the book of the film; and the game.

Prizes will be awarded to the senders of the first five correct entries pulled out of our competition sack. The closing date is 7 March 1986. If you do not wish to cut up your copy of CCI, please feel free to send us a photocopy of the completed competition page. Send your entries to:

Max Headroom Competition,
CCI,
Finsbury Business Centre,
40 Bowling Green Lane,
London EX1R ONE

Please answer the following questions:

1 What is Max Headroom?
A ______________________________

2 How did Max get his name in the film?
A ______________________________

3 Which TV station spawned Max?
A ______________________________

4 Which TV station gave Max his first big break?
A ______________________________

Name ______________________________
Age ______________________________
Address ______________________________
____

BACK TO THE FUTURE

Win The Game

You've read our film review, been treated to a glimpse of the future with our game preview...now enter our Back To The Future competition!

From the sneak preview that CCI was allowed, the Back To The Future game looks like being truly AWESOME. We are giving you the chance to win one of 10 free copies of the game, PLUS a glamorous CCI T-Shirt.

The Competition

Our photograph shows inventor Doc Brown in a situation he would probably rather not be in.

What we want you to do is to come up with a caption for this picture. It doesn't matter if you haven't seen the film, just use your imgaination.

The Prizes

Ten prizes of the Back To The Future game and a CCI T-shirt will be awarded to the senders of the 10 most imaginative and wittiest captions.

The closing date for the competition is 7 March 1986. If you do not wish to cut up your copy of CCI, please feel free to send us a photocopy of the completed competition page.

The address to send your entry to is:

Caption Competition,
CCI,
Finsbury Business Centre,
40 Bowling Green Lane,
London EC1R ONE.

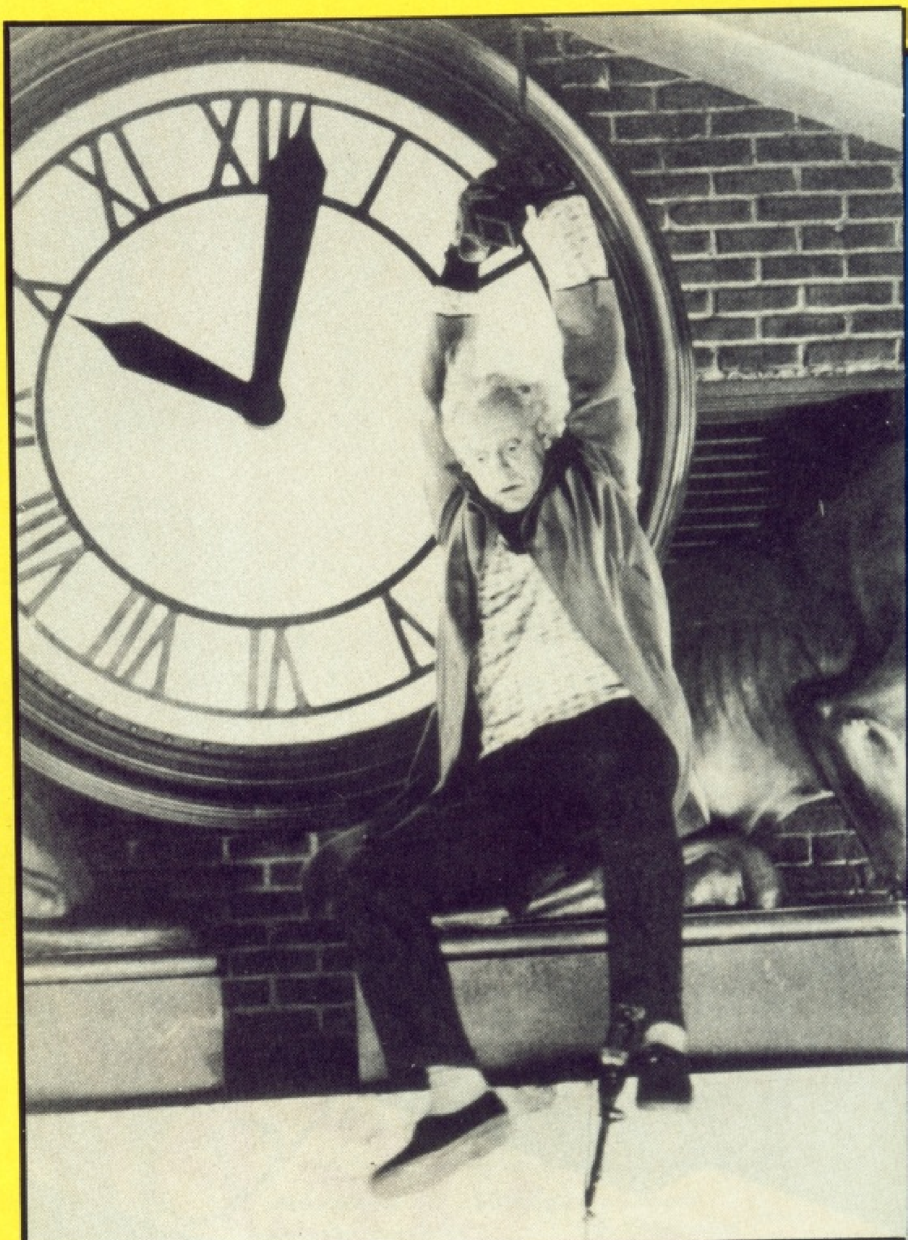
Name ____________________

Age ____________________

Address ____________________

____

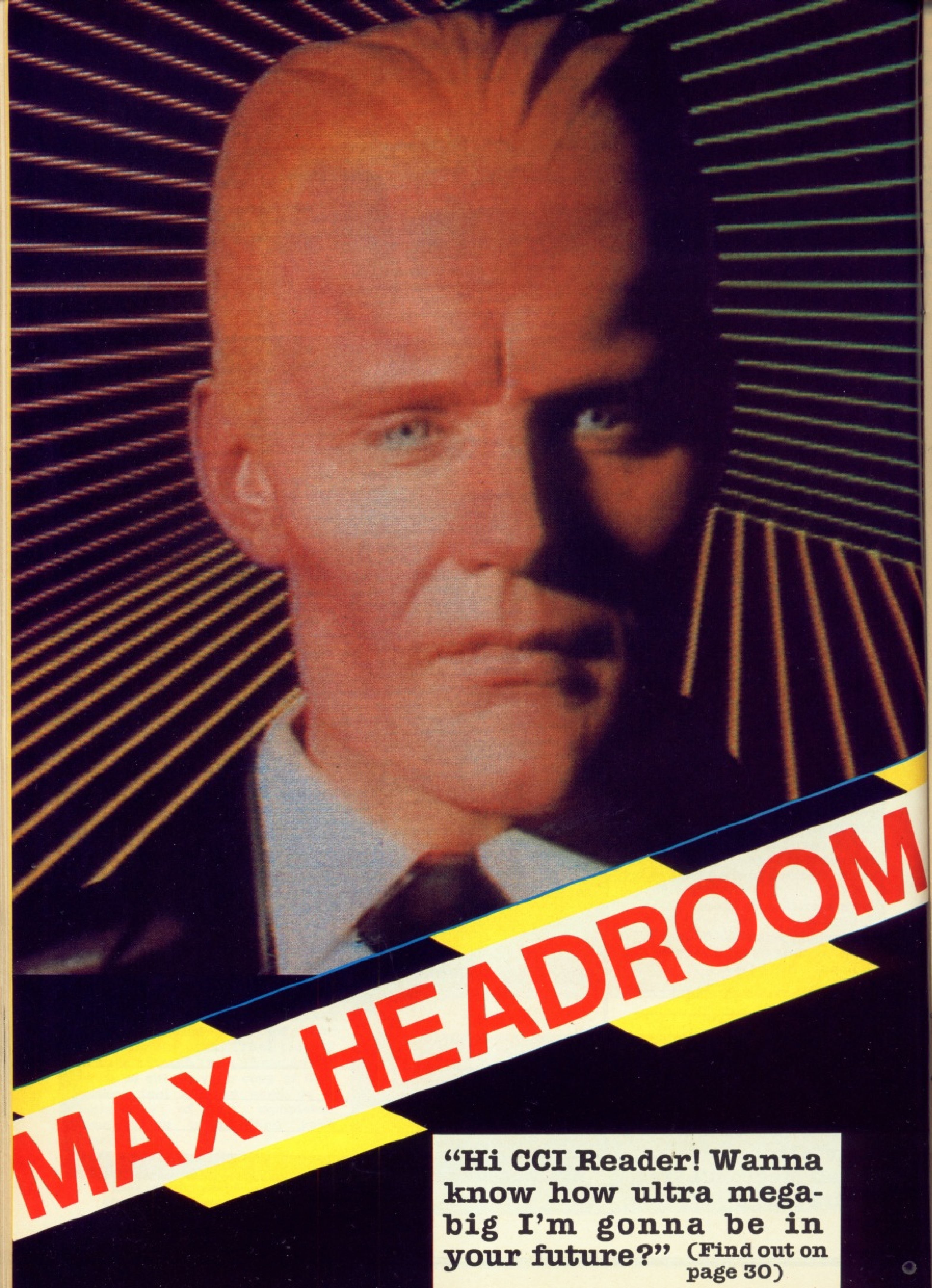
Please indicate T-shirt size:
Small/Medium/Large/ Extra Large



CAPTION ____________________

____

____


MAX HEADROOM

"Hi CCI Reader! Wanna know how ultra mega-big I'm gonna be in your future?" (Find out on page 30)

GRIP STICK · GRIP STICK · GRIP STICK · GRIP STICK · GRIP STICK · GRIP STICK · GRIP STICK · GRIP STICK · GRIP STICK

Now FINGER TIP CONTROL IS WITHIN YOUR GRASP.

A totally new design gives instant response to your command movements.

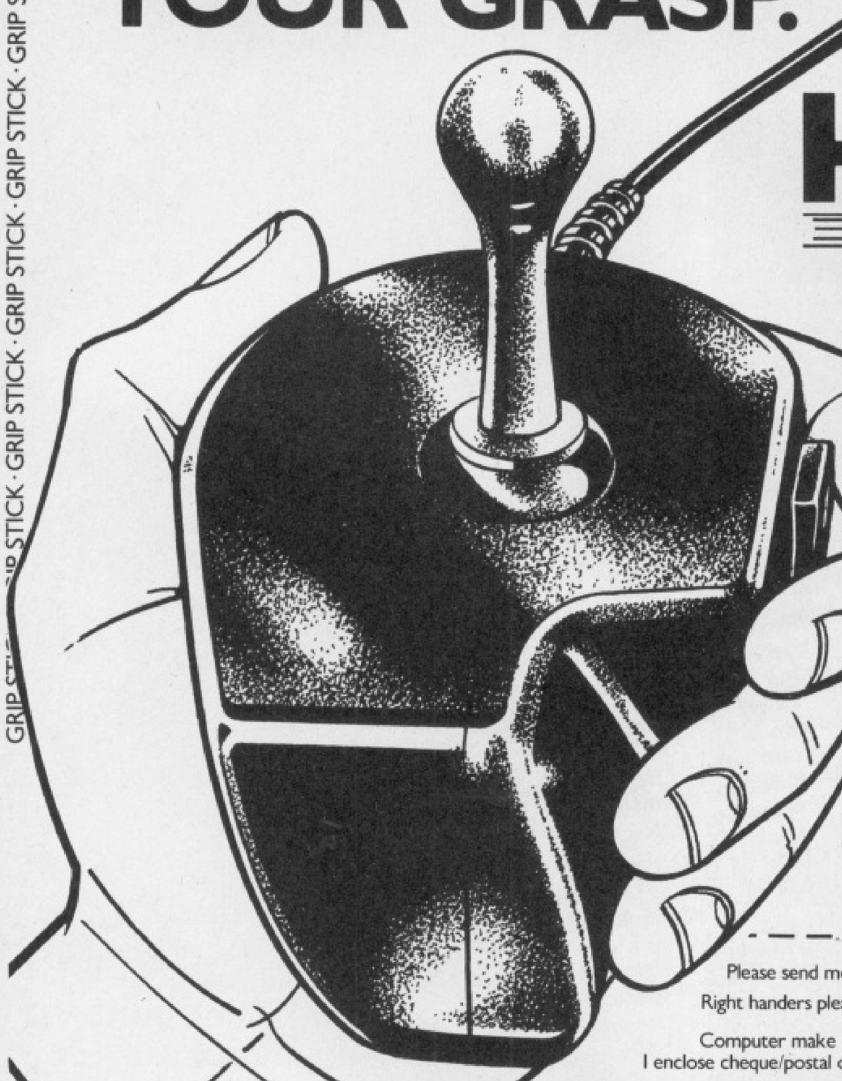
Up to now Joysticks of the Speedking quality are priced at £20 and over. The Speedking is microswitch based, and costs only **£12.99, £14.99** for BBC & DRAGON machines.

Designed to fit your hand, not the table top, meaning comfort during the longest of games.

GUARANTEED for Twelve Months.

Available for Spectrum 48K and Plus Commodore 64, 128 and Vic 20 Atari, Electron, Amstrad, BBC and Dragon machines.

Available in left and right handed models.



konix

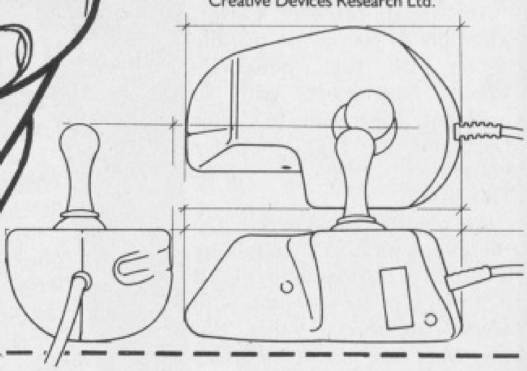
SPEEDKING

A Major Breakthrough in Joystick Design

ONLY £12.99

Trade and export enquiries contact Keith or Wayne on **(04925) 5913**

Konix Computer Products is a trading name of Creative Devices Research Ltd.



Please send me ...... Speedking(s) at £12.99 each

Right handers please order .... right handed model ☐

Computer make .... left handed ☐

I enclose cheque/postal order payable to KONIX

Please charge my Access/Visa ____________________

Card holders can call (0495) 711988 to order.

Signature ____________________

Name: ____________________

Address: ____________________

____________________ Postcode __________ Tel: __________

Send to Konix Computer Products Unit 13 Sirhowy Ind Est Tredegar Gwent NP2 4QZ

GRIP STICK · GRIP

Max Headroom is the world's first computer-generated television personality. He was created as a result of a request from Channel 4 for a programme to showcase the best of rock and pop videos. The concept of computer-generated graphics whith a human voice-over to provide the links between video clips was developed. From this original concept came Max Headroom, the computer-generated TV host.

The idea met with much enthusiasm at Channel 4. But who was Max? A personality and history were required. This problem was solved with the commissioning of a film of a one-hour drama telling the story of the creation of Max Headroom and his emergence as the presenter of a 24 hours a day rock video show. The scene was set for the Max Headroom Show series.

"Max is an image whose time has come – the perfect television presenter. No temperamental outbursts, no hangovers, no holidays, no salary. Constant, 24 hours a day."

A. Is M
your r
not ha
for cha
there
in you

Q. Yes, no
if you wan
change th
actually, I
just did a
Michael H
wants to s
strutting
for anybo

ENTER
FIGHT
FLOOR
MONITOR

Max Headroom – the Film

Max Headroom is set 20 minutes into the future in a world where television is the only growth industry.

TV networks battle for top ratings. Network 23 the top-rating network, mainly due to compressed TV commercials called Blipverts. These happen so fast they are embedded in the viewer's mind before they can switch channels, but they have an appalling side-effect.

Investigate reporter, Carter, attempts to reveal the terrible secret of this network's success, but meets with an accident. This results in Carter becoming the first computer generated host – Max Headroom.

Max Headroom is peddled to Bigtime, a pirate TV station, by a couple of heavies who think it is a piece of techno-junk with some commercial value. But the 'Max Box' sends Bigtime's ratings soaring.

Not everyone is as thrilled and descend on Bigtime...

"Max Headroom has developed into a truly international multi-media personality. He is to television what Coca-Cola is to soft drinks and McDonalds is to fast food. Max has one thing in common with almost every person in the Western World. They watch TV. Max is TV."

Achievements of Max Headroom

*The film has been nominated for two ACE awards in the USA.

*London magazine City Limits voted Max top TV personality.

*A second series of the Max Headroom Show is planned for production in early 1986.

*Two books, Max Headroom's Guide To Life and the Picture Book of the Film are available.

*A series of computer games based on Max Headroom are shortly to be released.

*Look out for Max Headroom merchandising.

Q. Why do you act like a computer-generated thing when you are really a human?

A. You're very kind. The more people that take me for a human, the more I shal impr-impr-impr-get better. That's what I "think".

Max Headroom
real name? If
ave you a reason
hanging it? Is
e a guilty secret
ur past?

o and no in that order, but
ant to sell more copies you
them round a bit. No
, I kept the initials and
a quiet name-swap with
Heseltine. I think he
swap back but I'm not
g around in a flak-jacket
ody.

Q. Can you get "high" on voltage charges? How much room is there in your electronic world?

A. I wish I had an electronic world, there's so little room in the studio, if I smile too broadly someone has to open the door! An, comedy – I can't resist it! About voltage, a very funny and frightening thing happened before my first show – pity, I've no time to tell you about it.

Q. Do you play computer games?

A. Of course not, it's not much fun playing with yourself, and it's boring to win all the time.

Q. Who programmed you?

A. Originally the producer, but now I'm almost completely self-programming, and I'm about to become the first ever computer-generated-producer/writer/performer – you wait and see the difference when it happens!

Q. As a computer generated screen image, admittedly a highly charismatic one, do you feel you are inferior or superior to humans?

A. Humans are a very special breed aren't they – good and bad, and I know some (my ex-producer included) who are really nasty little breeders! Ah, more jokes – if only my all-too-human writers could come up with things like that. But no, I feel superior to my public I'm simply content that they look up to me as they do.

Q. Is there a Mini Headroom?

A. I don't know, try the Teletext service.

Q. Who/what is Max Headroom?

A. A lot of people see me as something very special and I'm humble enough to accept other people's opinion – they're right. I was brought on to the networks to give them a little more pezazz, fizz, razzamatazz, and other words with lots of Zs in them.

Q. What do you put your popularity down to? In other words, what is the Max Factor?

A. Well it's not doing jokes like that. My popularity comes down to my very high degree of perfection, plus a strong element of modesty.

Max Headroom

Edison Carter's nose is itching! Network 23's ace reporter always has trouble with his nasal passages when a story doesn't quite add up. His sixth sense leads him to Network 23's tower block and his intuition points to floor 203 – the computer lab.

Max Headroom is the name on everyone's lips and Edison, helped by Theora, his controller, is hot on the trail of the black box which holds the Max Personality Generator.

Theora's 'Maxhunter' computer program is the only help Edison is likely to find. Linked to the Network's master computer, Maxhunter acts as Edison's eyes and ears in his midnight search.

His problems are huge;

* The staff arrive at six A.M. so he must be finished by then;
* He must control the lift by typing code numbers known only to the Director – and hopefully Maxhunter!
* Scores of security guards, two hired assassins and Bryce, the evil hacker who invented Max, all have vested interests in Edison's destruction.

Only you can help Edison to complete is quest.

Released at the end of February 1986, on the Commodore 64, Spectrum and Amstrad, A Quicksilva program with a recommended retail price of £9.95.

THE 64 SOFTWARE CENTRE
1 Princteton Street, London WC1
01-430 0954

SOFTWARE PRICE LIST — Prices include VAT

d = disk c = cassette r = cartridge

Accounting systems (Office use)

Anagram Systems – Sales Ledger	d	£75.00
Anagram Systems – Purchase/Nominal Ledger	d	£75.00
Anagram Systems – Cashbook	d	£75.00
Gemini – Cashbook (with nominal analysis)	d	£34.95
Gemini – Cashbook (with nominal analysis)	c	£29.95
Gemini – Final Accounts	d	£34.95
Gemini – Final Accounts	c	£29.95
Gemini – Cashbook/VAT/Final Accounts	c	£49.95
Gemini – Cashbook/VAT/Final Accounts	d	£59.95
Studio – Payroll 64	d	£49.95
Dell – Invoice Generator II	d	£24.95

Stock Control Systems

Practicorp – Inventory 64	d	£19.95
Gemini – Stock Control	d	£12.95
Gemini – Stock Control	c	£9.95
Anagram – Stock Control	d	£75.00

Database Filing Systems

Practicorp – Practifile 64	d	£24.50
Precision – Superbase 64	d	£59.95
Precision – Superbase Starter	d	£34.95
Fieldmaster – record Card	d or c	£19.95
Dell – Superfile	d	£14.95
Supersoft – Instant Recall	d or c	£17.95

Spreadsheets

Handic – Easy Calcresult	r	£39.95
Handic – Advanced Calcresult	r + d	£79.95
Practicorp – Practicalc II	d	£49,95
Supersoft – Busicalc 1	d or c	£17.95
Supersoft – Busicalc 3	d	£49.95

Word Processors

Bank Street Writer	d	£69.00
Precision – Superscript	d	£59.95
Supersoft – Word Perfect	d	£19.95
Supersoft – Word Perfect	c	£17.95

Utilities

Adamsoft – Ultrabasic	d	£19.95
Adamsoft – Chartpak 64	d	£24.95
Adamsoft – Superdisk	d	£12.50
Adamsoft – Graphics Designer	d	£19.95
Blitz compiler	f	£50.00
Access – Mach 5 Fastload	c+d	£39.95

Crystal – Zeus 64	d	£14.95
Crystal – Zeus 64	c	£9.95
CSM – Disk Aligment Program	d	£59.95
Koalapad and Printer disk	d	£99.95
Fieldmaster – Poster printer	c	£19.95
Kuma – BC Basic	r	£47.50
Practicorp – 64 Doctor	d	£19.95
Supersoft – Victree	r	£56.35
Supersoft – Mikro Assembler	r	£59.80
Supersoft – Zoom Monitor	d	£14.95
Supersoft – Toolkit 64	c	£9.95
Supersoft – Toolkit 64	d	£11.95
Activision – The Designer's Pencil	c	£11.95
Jetpack Compiler	d	£39.95
Jetpack Compiler	c	£14.95

Hesware – forth 64	c	£54.95
FP – Pascal 64	d	£34.95
Oasis – Machine Lightning	c	£29.95
Talent – Panorama	c	£17.95
Skyles – 1541 Flash kit	r	£89.95
Epyx – Fast load	r	£49.95
Broderbund – The Printshop	d	£44.95
Broderbund – Printshop graphics disk (1,2 or 3)	d	£29.95
Broderbund – The Music Shop	d	£49.95
Access – Master Composer	d	£49.95
Springboard – The Newsroom	d	£59.95

Flight Simulators

Microprose – Solo Flight	c or d	£14.95
Aerojet	d	£39.95
Sublogic – Flight Simulator II	d	£49.95
Sublogic – Flight Simulator II	c	£42.95
Sublogic – Jet	d	£49.90
Supersoft – Interdictor Pilot	d	£19.95
Supersoft – Interdictor Pilot	c	£17.95
EA – Sky Fox	d	£12.95

War Simulations SSI, SSG, DKG, ETC

Adventures SSI, INFOCOM, ETC

ALL IN STOCK NOW – Callers welcome
(10am-6pm including Saturdays)

Mail Order: Cheque or PO – add £2 for items over £20, others free.
Credit cards (access/Visa): phone or write. Immediate despatch.

The 64 Software Centre
1 Princeton Street, London WC1
Please supply the following items:
1.......................... Qty.... @ £..........................
2.......................... Qty.... @ £..........................
3.......................... Qty.... @ £..........................
4.......................... Qty.... @ £..........................
TOTAL £..........................
POSTAGE £..........................
TOTAL £..........................
Name..........................
Vis/Access Card No. ....
Address ....
....
Date .... Signature ....

MEGA

URIDIUM

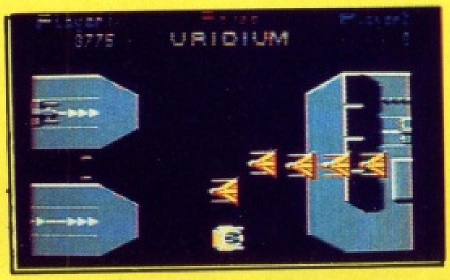
In the last year, Andrew Braybrook has received a deserved amount of praise and attention for the products he has released; none more so than his previous game; Paradroid.

In my view Paradroid was one of the best games of 1985, and his first release of 1986 – Uridium – would have had to be really special to live up to it's predecessor. Unfortunately it doesn't.

Uridium is just not quite as original an idea, even if the execution is just superb. The graphics are excellent with the same pseudo 3-D land underneath your ship, and a really nice touch when you perform a 180 degree spin.

The most noticable thing about Uridium – hailed officially as the sequel to Paradroid – is that it really is little more than a really good shoot-em-up. This is not putting the game down, far from it. I think the game is excellent and have played it for hours, but with a little more care it should have been even better.

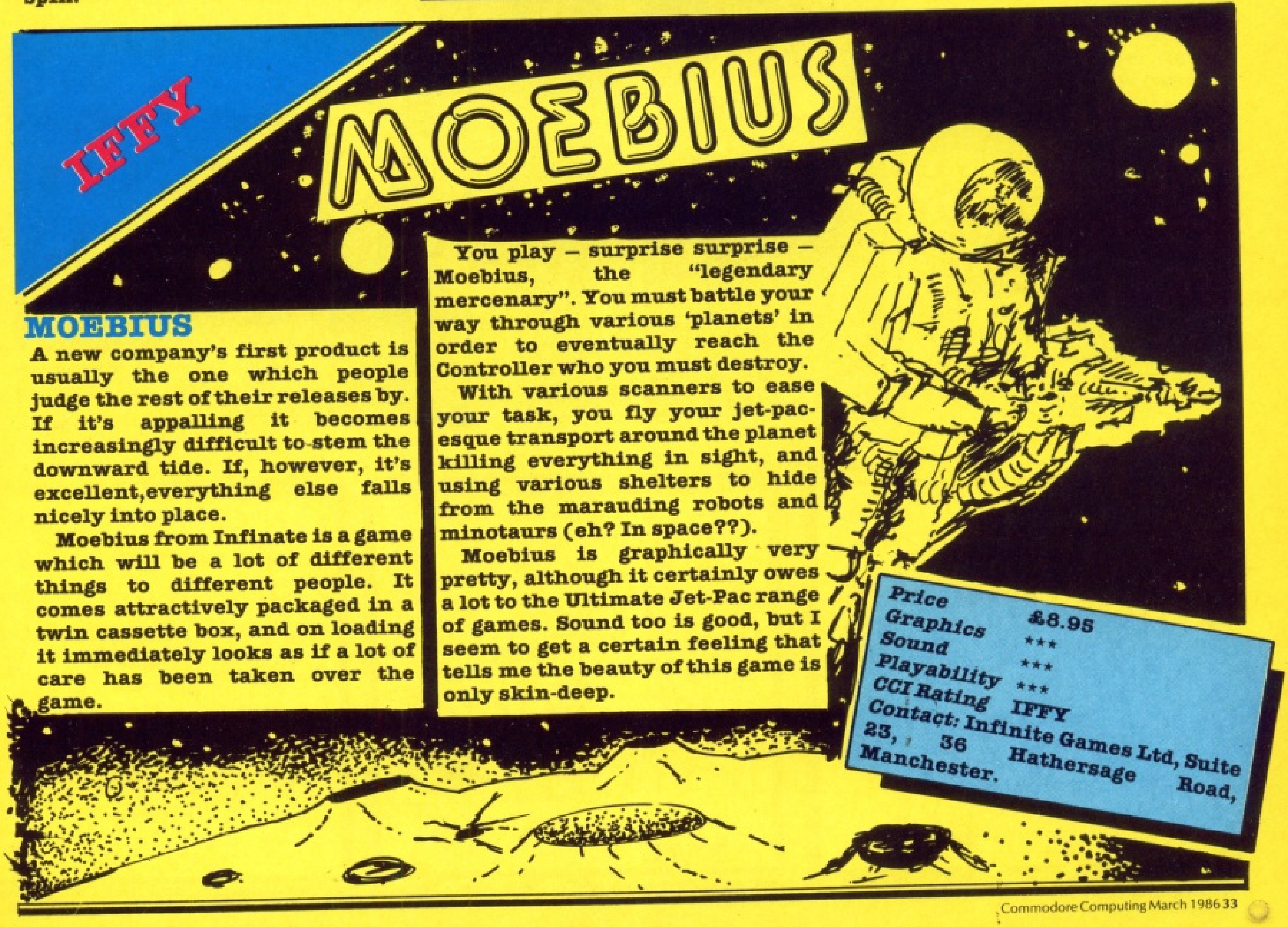
Musically Uridium is also good, and the effects (especially when put through a stereo) are really arcade-like. When it comes down to it there are not that many really good shoot-em-ups being released at the moment, and Uridium shows how far that basic idea can be taken.



Price £8.95 cassette
£12.95 disk
Graphics ****
Sound ****
Playability ***
CCI Rating MEGA
Contact: Hewson, Hewson House, 56b Milton Trading Estate, Milton, Abingdon, Oxon OX14 4RX. Tel: 0235 832939.

IFFY

MOEBIUS



MOEBIUS

A new company's first product is usually the one which people judge the rest of their releases by. If it's appalling it becomes increasingly difficult to stem the downward tide. If, however, it's excellent,everything else falls nicely into place.

Moebius from Infinate is a game which will be a lot of different things to different people. It comes attractively packaged in a twin cassette box, and on loading it immediately looks as if a lot of care has been taken over the game.

You play – surprise surprise – Moebius, the "legendary mercenary". You must battle your way through various 'planets' in order to eventually reach the Controller who you must destroy.

With various scanners to ease your task, you fly your jet-pac-esque transport around the planet killing everything in sight, and using various shelters to hide from the marauding robots and minotaurs (eh? In space??).

Moebius is graphically very pretty, although it certainly owes a lot to the Ultimate Jet-Pac range of games. Sound too is good, but I seem to get a certain feeling that tells me the beauty of this game is only skin-deep.

Price £8.95
Graphics ***
Sound ***
Playability ***
CCI Rating IFFY
Contact: Infinite Games Ltd, Suite 23, 36 Hathersage Road, Manchester.

INSIDE INFO

Felix Says....

Having fought my way out of a certain persons 501's I am here to give you details and gossip on games, people, and general happenings at this time of year.

3 Times Evading

After changing the name of their latest release from Twister, Mother of Harlots, to plain Twister, to avoid a repitition of PCW's 'Bad Taste' comments, System 3 also seemed to have moved to new premises – although where these are is not quite certain. If Mark Kale reads this maybe he could contact me, I'd love to see a finished System 3 game, I've forgotten what they look like!!

Mud Owns Up

Mud should be ready for launch on March 1. This is the latest news, or so I'm told. As it is now nearly five months late I really hope it is worth the wait, though I am assured that it is!

Santa Claus is coming to Town

Although it is a little after the festive season I thought you'd all be dying to know which member of a large software house insists on wearing Father Christmas boxer shorts!! Information has reached me, from people who assure me are CLOSE friends (too close if you ask me!), that a certain Andrew Wright from Activision is the culprit – but then coming from Croydon, that doesn't surprise me!

Why are we waiting

Orpheus win this month's award for the longest wait for an 'imminent release'. The Young Ones was first seen at the PCW show, in demo form, and since then I have been told various reasons for its delay, but surely the post cannot take three weeks? I do hope we see it soon!

First Amiga Game

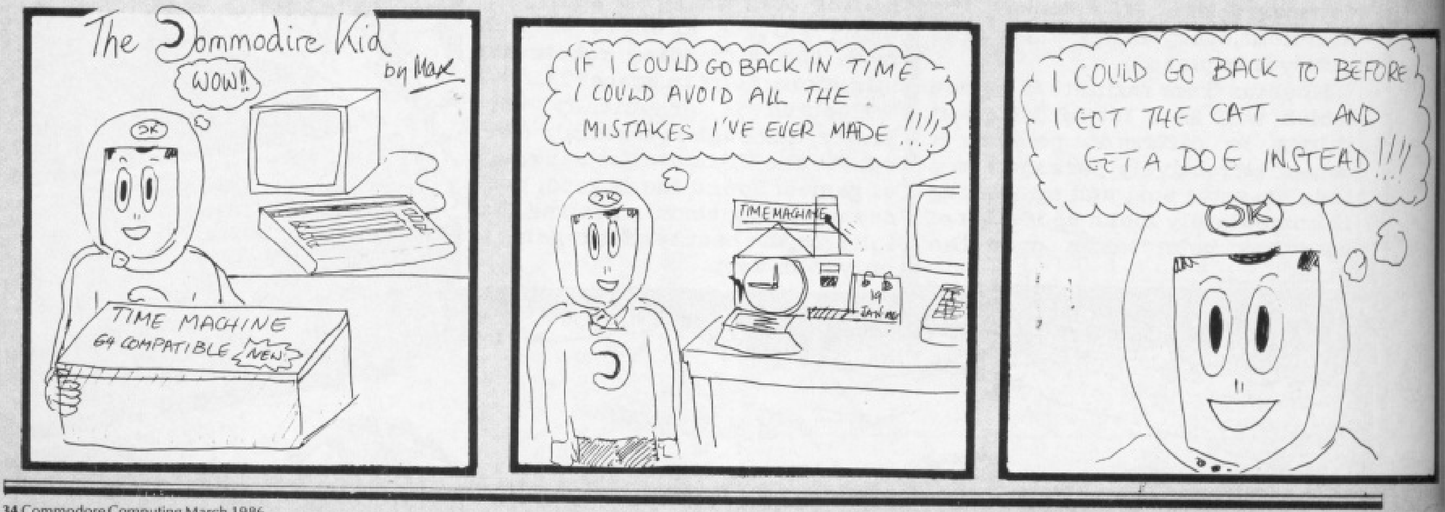
Psygonsis, of Liverpool can claim to be the first people to release a game for the Amiga. Brattacus, a conversion from the QL and Atari St is to be released almost immediately, and as such should corner what little market there is!

Yak Returns

With the Hairy One having gone skiing for a couple of weeks with Tony Crowther I am glad to report that all the gossip about these two programmers is totally unfounded. From what I hear they got on like a proverbial house on fire. Does this mean we'll be getting a Locomotive Llama?? Who knows??

Ear Today!!!

News has arrived to me that a certain games player somewhere in Ludlow has been listening to games too loud, thereby causing a severe case of 'Earache'. I do hope he recovers soon!


The Commodire Kid
by Max
WOW!!
TIME MACHINE
64 COMPATIBLE
NEW
IF I COULD GO BACK IN TIME I COULD AVOID ALL THE MISTAKES I'VE EVER MADE !!!!
TIME MACHINE
19 JAN
I COULD GO BACK TO BEFORE I GOT THE CAT — AND GET A DOG INSTEAD!!!
CK

Sweden recovers from loss of Abba

A new software company, Greve Graphics, recently wrote to me with news of their game 'Soldier One'. I haven't a clue what it's about as they failed to send any details whatsoever, but they did send a picture of their chief programmer; Bengt 'the dog' Caroli.

If you saw the picture, his nickname would be self explanitary – hound or what!!!

Raiders Returns

Great news for all who like a good blast is that Star Raiders II, the sequel to the original super-classic, is to be released on the 64 in the not too distant future. My big worry was that they would have lost the original's brilliance, but much to my relief, having seen the Atari 520st demo, I can assure you that if the 64 version is half as good – it should be totally AWESOME!!!

World Domination?

Not content with being the largest supplier of games software in England, US Gold have now set up an international contract with Ultimate meaning they will manufacture, distribute, and market all of Ultimates future releases.

Although it's a bit sad to see one of the most renowned English software houses get swallowed up like this, hopefully it will mean that Ultimate start producing decent software again. With Dragon Skulle scheduled for release in Jnauary (though who knows when we'll see it?) we ought to find out soon whether the quality has improved.

As well as Ultimate, US Gold are thought to be signing a contract with Adventure International shortly, which would involve releasing titles under their 'All American Adventures' label.

Rumours of US Gold bid for Cuba are vehemently denied!

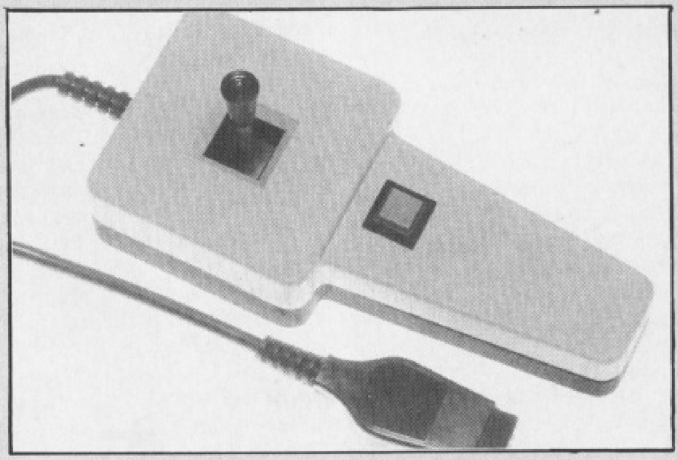
Bouncing Bounder

Although I managed to avoid getting it in this issue, due mainly to my total incompetance, Gremlin have recently announced Bounder. The game is totally brilliant, no question. It lacks for nothing – bar a Rob Hubbard soundtrack! The graphics are great and the game is one that is totally irresistable. I promise a full review next month.

Revs Stick

Newest joystick this month is one designed specifically to work with the new game from Firebird, REVS. As such it is an analogue joystick with no self centering. In use it proved very good, as long as you had time enough to get used to it!

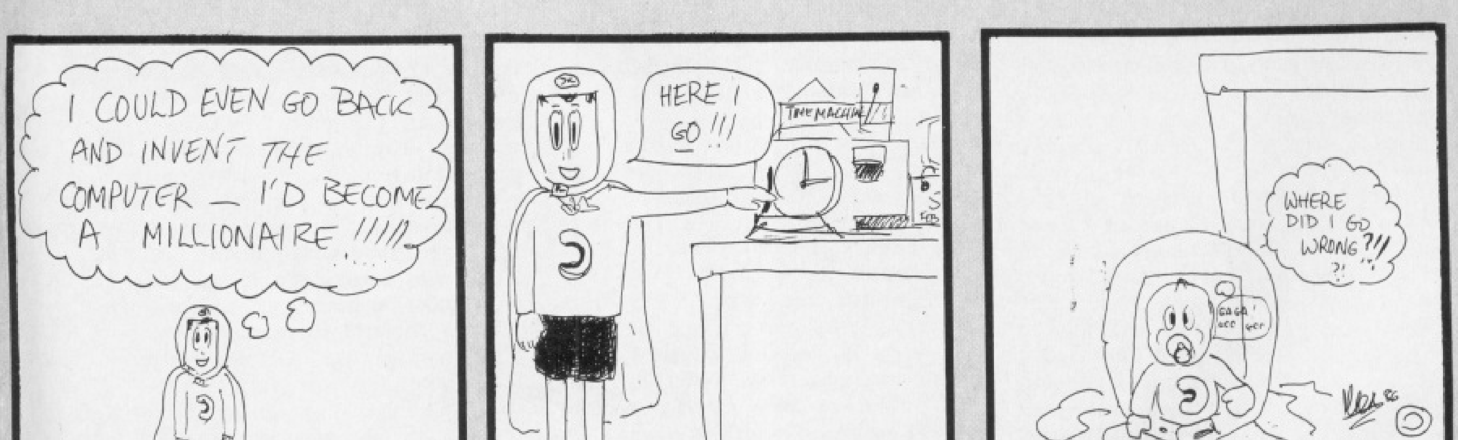
For more details contact Meedmore Distribution on 051 521 2202.

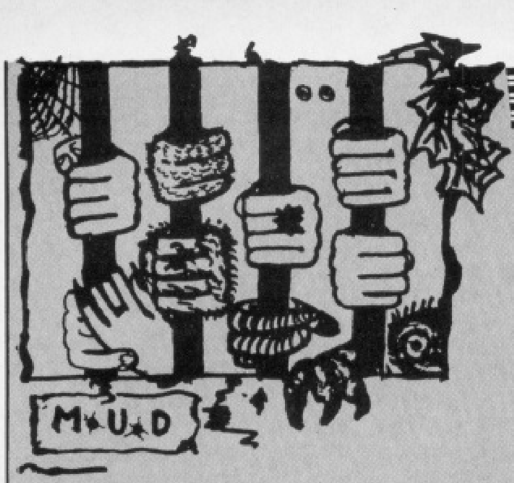


That's all for this month, except say that I'll try to get out again next month, it get's really horrible down here sometimes!!!! Bye from 'The Worlds Most Famous Cat' FELIX!

STOP PRESS

The Force will shortly be with us! That's the name of a new game shortly to be released by Mind Games. It was written with the consent – and in fact cooperation of Scotland Yard! See next issue for yet another CCI exclusive.


I COULD EVEN GO BACK AND INVENT THE COMPUTER – I'D BECOME A MILLIONAIRE !!!!!
HERE I GO !!!
TIME MACHINE
WHERE DID I GO WRONG ?!!
GAGA! GOO GER



Narrow Road Between Lands

Hello again Mudders! These last couple of months have been full of arguments, quarrels and rows on MUD, mainly over matters arising from the new Arch-Wizards. Most of them have been of a good hearted nature, with nobody outside those concerned affected, and the disputes settled amiably and peacefully, but there has been the odd exception. Brian the Arch-Wiz has stated quite catagorically that if he finds ANY wizards messing around with the mortals, then he will FOD (Finger Of Death, ex-persona. Basically, your persona is permanently wiped out of existence when a wizard does this to you!) them and possibly have them removed from wizard status. I personally think that this is a rather hard line to take, as part of the fun of being a wizard is the ability to torment, tease, and make fun of those mortals who once used to be your 'fellow' players (On reaching wizard rank, most people try to distance themselves from the mortals, and try to develop an aura of 'mystique' and magic about themselves). Several other wizards have also objected to this ruling in no light-hearted manner either! HEhehe.... Kate the Arch-Witch has said that she supports Brian's view. I suppose it is a good rule, so long as it is not applied to every case of teasing and tormenting that mortals complain about, to try to get back at the wizards!

Killer Wiz

There has also been a dispute over a persona who recently achieved wizard rank, Laurmara. Kate maintained that Laurmara was given help in the region of 30,000 points! Bolts of verbal force lashed out between those concerned. Whilst Laurmara was still a mortal, Kate, apparently, came onto the game and kept attempting to kill her off. Other players say that they have had this inflicted upon them, especially Jilly, who reached witch status despite these alleged attacks. I hope that other wizards are not doing this, because it really puts people off the game.

I have had several complaints sent to me about a wiz — and he shall remain nameless — who has allegedly been coming on as a mortal and killing players off. Please, stop this slightly infantile behaviour. I know that this is acceptable on Essex MUD, where the game is open to all, but on Compunet, which is a commercial system, people who are killed off by wizards who are just feeling malicious at the time rarely return to play the game again, which is obviously a great shame.

Heavy Usage

I mentioned a while back that since the reduction in playing time costs came into play (£1.75/hour), MUD usage shot up. Well, following this, usage dropped for a while, but luckily the approach of the festive season, for those of us who can afford it (dig-dig Zark! Snigger......), seemed to have revived people and people seem to be logging on more often. Now, every time I log onto MUD, I get swamped with requests from people asking if they can be mentioned in my next column, so here goes..........

HELLO TO: Spindle, Zark, Bridrin (ahhh-no more constant nagging from HIM!), David, Zeon, and anybody else who I have neglected to mention! Just think, no more hassling from people wanting a mention; peace at last.....Hehehe

Over Christmas many of you will have had the message 'Account-User Maximum exceeded-please try again later' (or words to that effect) appear when you are trying to log on. This is due to very heavy usage, because of the holidays. In the reasonably near-future, this message will appear very rarely, as Compunet are all set to execute vast improvements to the system. The code has already been re-written several times, so increasing capacity and speed considerably. So if you are on one night, desperately trying to get somewhere in the game, but can't because of the speed, don't fret because soon, all will be well.

Rumour has it that MUSE and Level 9, the renowned British s/w adventure house, are collaborating to produce an adventure of Infocomic (not sure about that word...hmmmmm!) proportions. This should result in a very high quality game with regard to the prose, and certainly a very good adventure, if this rumour has any substance to it! More on this....possibly....next month.

My pleas have been noticed I see! When I entered Valley a few days after the last article appeared, there were actually a few people playing it! I felt I had to see if they were real or not, and so tried talking to them and lo and behold, they really WERE real. Thank Wizard for that! Hehehe

A 'reputable' magazine recently stated that they had several computer celebreties holding subscriptions to British Telecom's M.U.D, and amongst them, they said, was Old Hairy Yak or Minter to the uninnitated amongst you, he says that he has not even been approached by BT to go into M.U.D. He doesn't really think it's his kind of game.

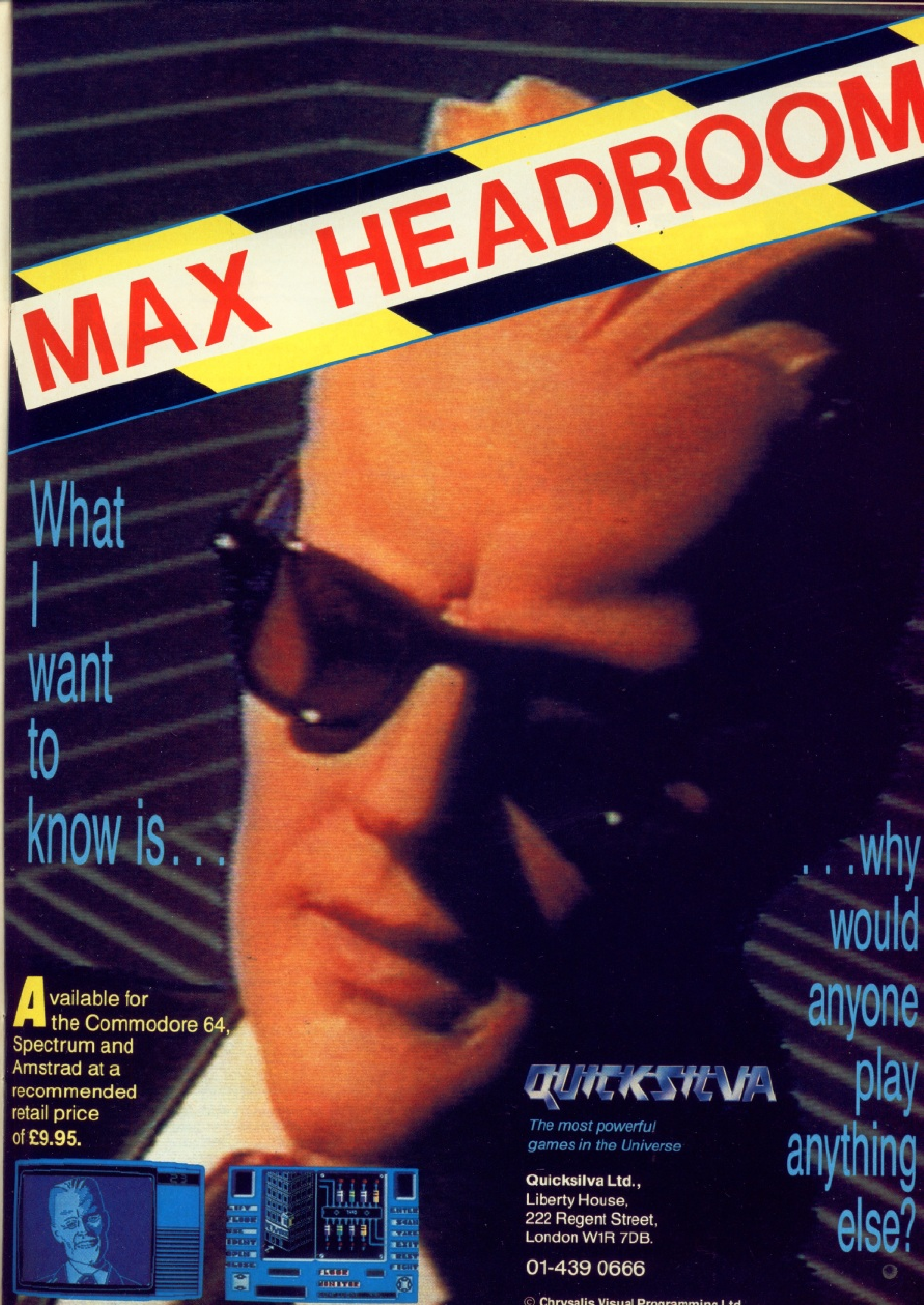
"I've got less violent things to do with my time", he says, "like finishing Colourspace on the Atari ST and the Amiga". So much for THAT 'fact'!

Can we please have less swearing on MUD? The odd, mild expletive adds flavour to the game, but some people are just going over the top. In future, anybody heard swearing will be FODDED! So beware all you foulmouths out there! Also, a word of advice, don't start shouting or swearing (however mild!) at a wizard. You will place yourself in mortal danger.......

There are a lot of low-level mortals about, but only a couple of really high ranking personas. We won't get many more wizards at this rate! Come on, get a move on!

Well, I'm off now to go MUdding and snoop on a few players! Hehehe catch you next month!

----*Zaphod the Arch-Wizard has just disappeared in a puff of smoke.


MAX HEADROOM
What I want to know is. . .
. . .why would anyone play anything else?
23

Available for the Commodore 64, Spectrum and Amstrad at a recommended retail price of **£9.95.**

QUICKSILVA

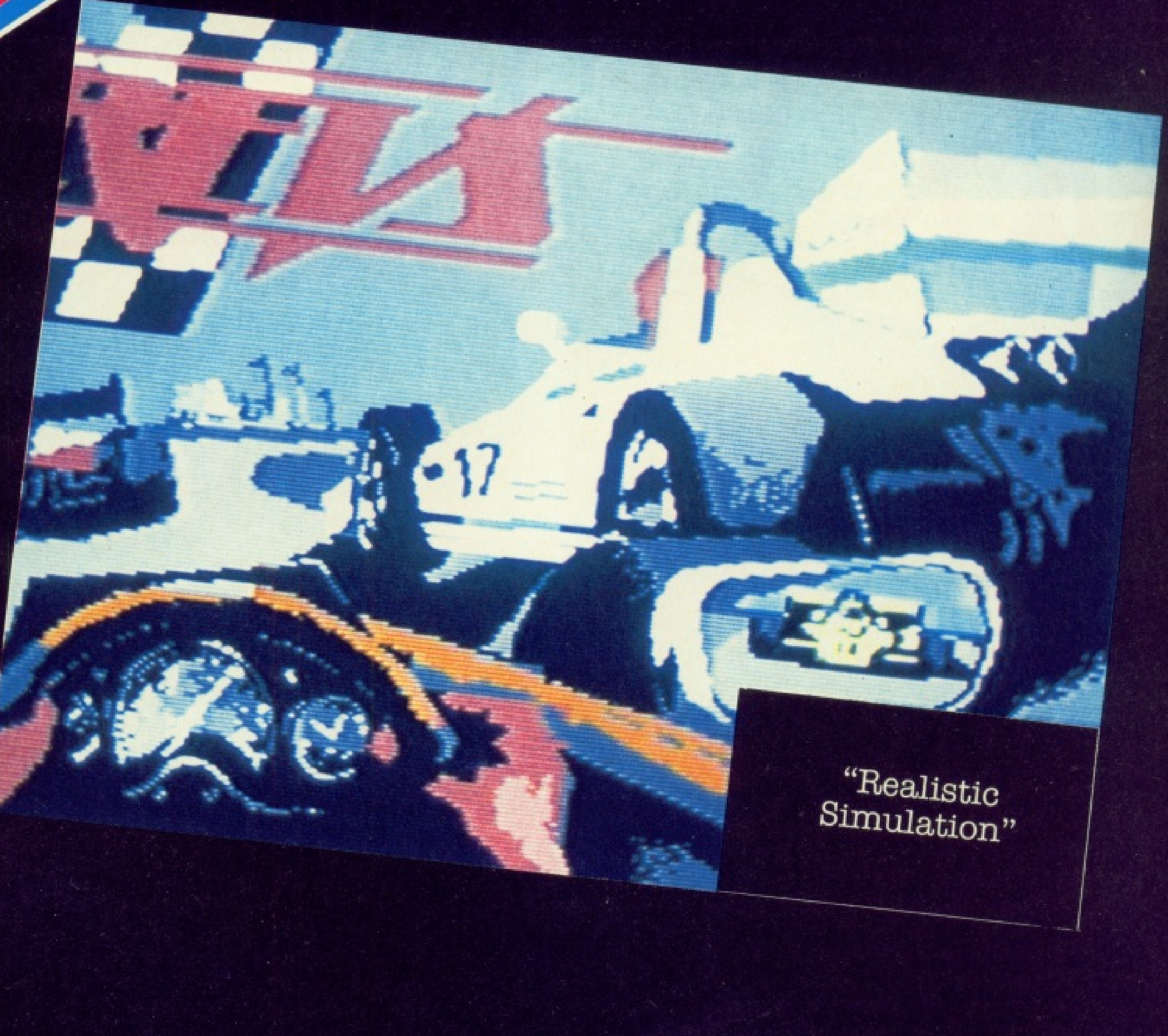
The most powerful games in the Universe

Quicksilva Ltd.,
Liberty House,
222 Regent Street,
London W1R 7DB.

01-439 0666

© Chrysalis Visual Programming Ltd.

AWESOME



"Realistic Simulation"

REVS

Following the trend they set with Elite last year, Firebird have now taken Acornsoft's other mega-game; Revs. When I first played Revs on the BBC I was astonished by the feeling of reality that it gave.

It seems that at last companies have realised that to sell a new racing car game – when there are already so many on the shelves – it would have to be something really special, and that's exactly what Revs is.

If you have played the BBC version of Revs you will immediately feel at home with your hands splayed all over the keyboard. I've never really been able to play this game with joysticks, although I hear that someone is bringing out a joystick purely to work with this game.

It really is amazing the lengths to which Firebird have gone to in order to keep the game's original features – even to the extent of reproducing the BBC's mode7 menus!

The game places you in the driving seat of a Formula 3 racing car. Originally Acornsoft were helped in the designing of the game by David Hunt (younger brother of Shunt), and you must race around Silverstone or Brands Hatch as fast as possible.

Realism is everything in this game, to the extent that you can see cars approaching in the wing mirrors, and more importantly (especially at Brands) you cannot see over the crests of hills!

This is the type of game that really shows the 64 at its best. The graphics are outstanding, the animation smooth, and the effects add to the general atmosphere.

Take my advice; buy the game, practice like hell, then shut the door, dim the lights and as the immortal Doors song says: "Keep yours eyes on the road and your hands upon the wheel'!!!!!!

Price:	£14.95 disc
Graphics:	****
Sound:	***
Playability:	****
CCI Rating:	AWESOME

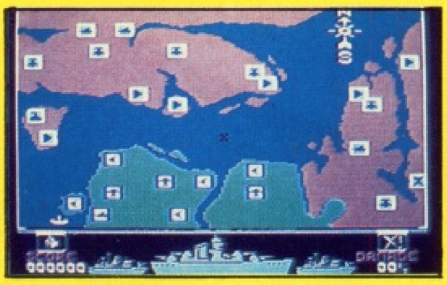
Contact: Firebird, Wellington House, Upper St Martins Lane, London WC2. Tel:01-379 6755.

IFFY

DEATH WAKE

Arcade-Simulations seem to be all the rage at the moment. I can only presume it's because software houses have realised that people want a little more for their money.

Death Wake, Quicksilva's latest release is not the best game I've played recently, but it could appeal to some people.



As the captain of the Undaunted, you are your country's last hope for a victory. Using your one main battleship, and two accompanying frigates you must try and battle your way towards the enemies base, and destroy it with one perfectly placed missile.

What makes the game interesting is not the addition of a map to try and make it seem strategic, but the different levels you must complete before you have finished the game. These include travelling in convoy through minefields, shooting down enemy planes, avoiding torpedoes, shooting gunships, as well as various other mindless blasts.

Graphically, Death Wake is not outstanding, especially when you have to look at it having played Mercenary, and the sound really is uninteresting – with only the most cursory effects. That apart, I quite enjoyed the game!

Price: £7.95
Graphics: **
Sound: **
Playability: ***
CCI Rating: IFFY
Contact: Quicksilva Ltd, 222 Regent Street, London W1R 7DB. Tel:01-439 0666

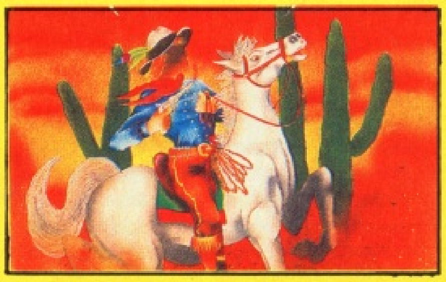
NAFF

OUCH
OUTLAWS

OUTLAWS

I have recently learnt that U.S Gold have taken over the sales and marketing of all Ultimate's new titles. This is an attempt to let Ultimate get on with programming decent games; and if Outlaws is anything to go by, they sure need it.

Imhotep, Ultimate's last release, was truly dreadful – unfortunately Outlaws isn't much better. Graphically it is obviously Ultimate – big sprites and smooth scrolling backgrounds, but the game has so little gameplay, and is so boringly repetitive that I can see very few people getting much satisfaction out of this one.

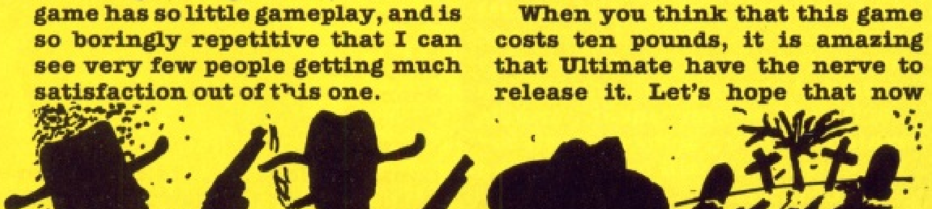


Musically too, Outlaws is below par – in a time when Rob Hubbard and Martin Galway produce such amazing music – to the extent that turning off the sound is almost essential.

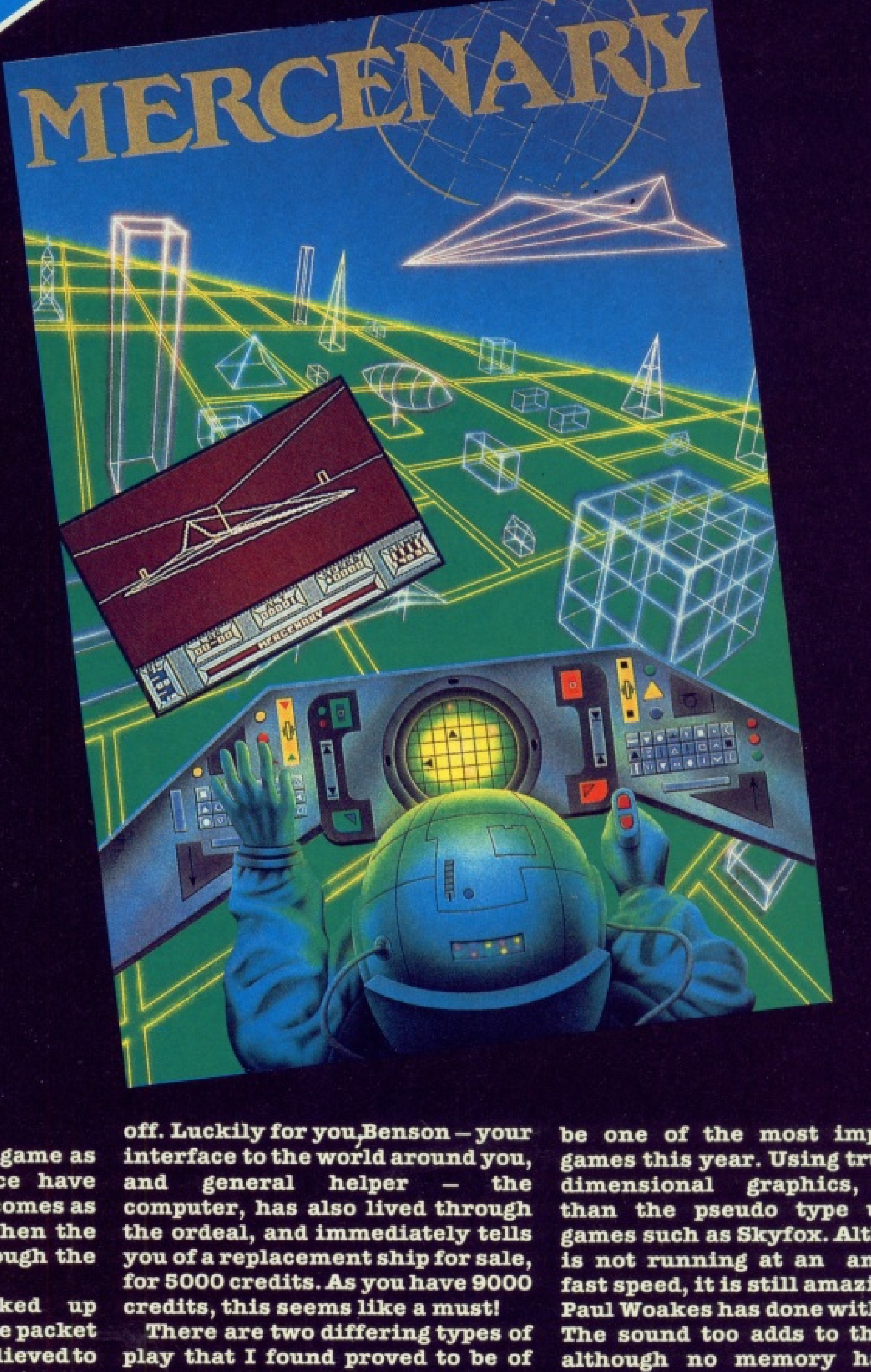
When you think that this game costs ten pounds, it is amazing that Ultimate have the nerve to release it. Let's hope that now they have more time, Ultimate go back to their old ways and produce really high quality games – worth waiting for!

Even the horse that you must ride around Indian and Gatlin territory looks as if it's bored with the game. Although they were criticised for being a little lacklustre, the Pendragon series were fab compared to this (come back Arthur, all is forgiven!).

Price £9.95
Graphics ***
Sound *
Playability: *
CCI Rating NAFF
Contact: Ultimate Play The Game, The Green, Ashby-de-la-Zouch, Leicestershire LE6 5JU. Tel:0530 411485.



AWESOME



MERCENARY

When you've waited for a game as long as we at the office have waited for Mercenary, it comes as a bit of an anti-climax when the game actually comes through the door!

Having actually worked up enough courage to open the packet and load the game I was relieved to see that, even after ten minutes play, this game really is as good as anything I've ever seen — as far as Elitesque wire line (vector) graphics are concerned.

The game is sub-titled; 'Escape from Targ', and in the long run this is really what you want to achieve, but to do this you must aquire enough money, either through the spoils of war, or by taking on missions from the Palyars and Mechanoids.

The game starts by showing your ship crashing into the planet Targ. Although you survive unhurt, your ship is a total write-off. Luckily for you,Benson — your interface to the world around you, and general helper — the computer, has also lived through the ordeal, and immediately tells you of a replacement ship for sale, for 5000 credits. As you have 9000 credits, this seems like a must!

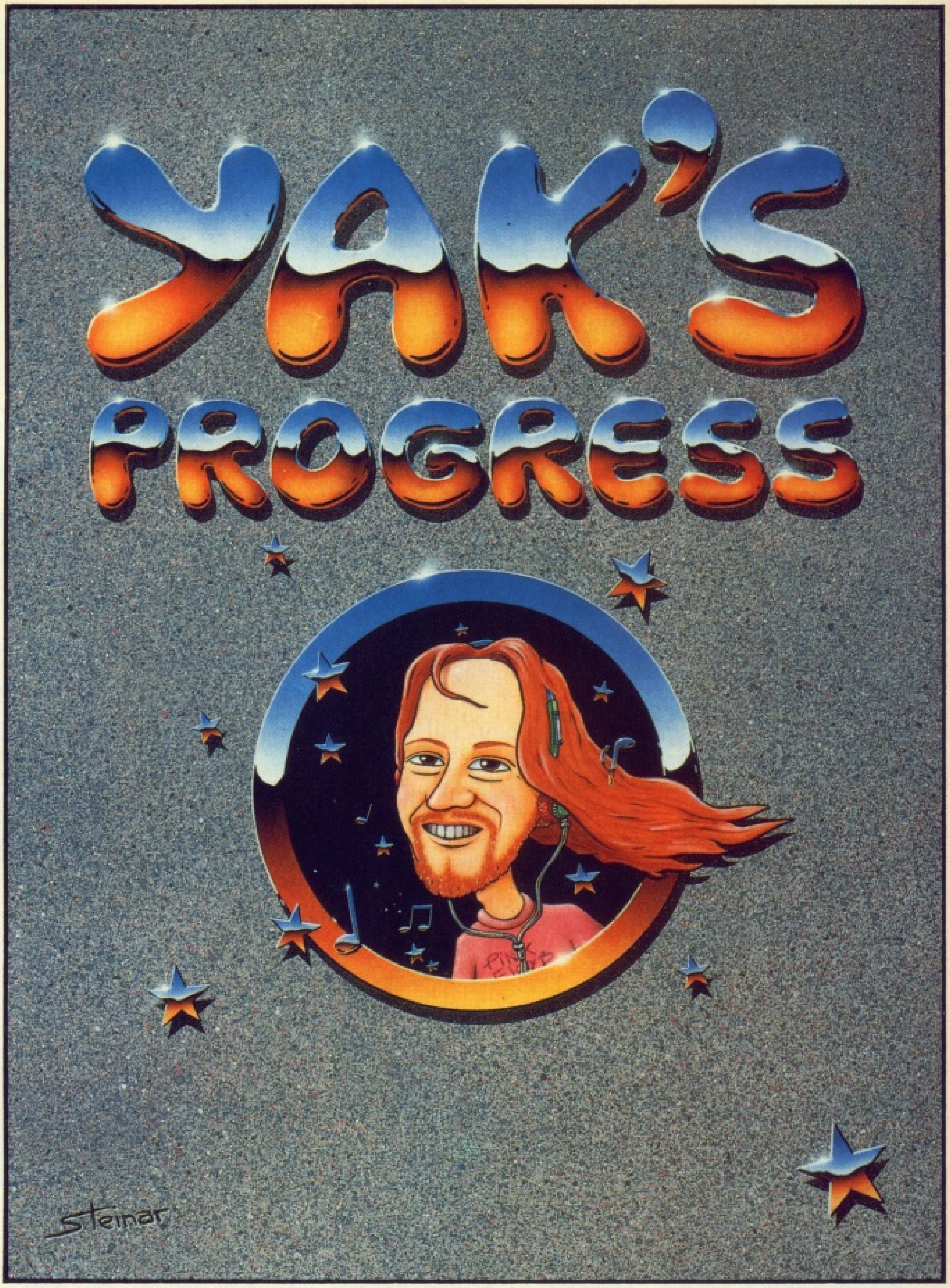
There are two differing types of play that I found proved to be of value to the aspiring superhero. Firstly, you can play the 'lets blast everything in sight' game, but unless you are quite an experienced pilot, you will find that death is an annoyingly frequent occurence.

More practically you can spend an awfully long time just exploring various objects and areas for, as well as the huge overland playing area, there are a variety of sub-terranean tunnels which — when you have mastered the elevators — will quickly prove to be of interest.

Graphically Mercenary has to be one of the most impressive games this year. Using true three dimensional graphics, rather than the pseudo type used on games such as Skyfox. Although it is not running at an amazingly fast speed, it is still amazing what Paul Woakes has done with the 64. The sound too adds to the game, although no memory has been wasted on pretty theme tunes!

Overall, Mercenary is a truly outstanding game, well worthy of all the hype it has and will receive; brilliant! I can't wait for Mercenary II (although if the past is anything to go by, I'll have to!!)

Price: £9.95 cassette
£12.95 disk
Graphics: *****
Sound: ***
Playability: ****
CCI Rating: AWESOME
Contact: Novagen, 142 Alcester Road, Birmingham B13 8HS. Tel: 021-449 9516.


YAK'S PROGRESS
Steinar

Llamasoft

YAK'S PROGRESS FOR THE CBM 64

'Let there be sprites ...' a collection of eight of Jeff Minter's hairy classics for the '64;

★ATTACK OF THE MUTANT CAMELS ★MATRIX ★LASER ZONE ★HOVER BOVVER ★REVENGE OF THE MUTANT CAMELS ★SHEEP IN SPACE ★METAGALACTIC LLAMAS BATTLE AT THE EDGE OF TIME ★ANCIPITAL

IN PRESENTATION BOX WITH J.M.'s HISTORICAL NOTES! — **ON DISK £11.95 ON 2 TAPES £9.45**

colourspace
A LIGHT SYNTHESISER
COLOURSPACE: A LIGHT SYNTHESISER
by Jeff Minter

COLOURSPACE FOR THE BBC 'B'

A great version of this unique software, for BBC owners. COLOURSPACE and its predecessor PSYCHEDELIA have been described as INTERACTIVE FIREWORKS, fantastic lightshows, a wonderful accompaniment to fantastic music. We've caught the rainbow...

ON TAPE £7.95

GAMES AVAILABLE FROM ALL GOOD COMPUTER RETAILERS OR FROM LLAMASOFT LTD. 49 MOUNT PLEASANT, TADLEY, HANTS TEL: (07356 4478)
S.A.E. FOR CATALOGUE & NEWSLETTER 'THE NATURE OF THE BEAST'

NAFF

BLADE RUNNER

In my view 'Bladerunner' is the best sci-fi film I have ever seen. Although this sounds like a ridiculously sweeping statement, it was not until the third viewing that I really felt I understood all the intricacies of the film and, unlike any other film I can think of, it still keeps me glued to my seat.

When about three months ago I heard that CRL were producing a game loosely based on sections of the film, I became very excited, and rushed over to see a pre-production version.

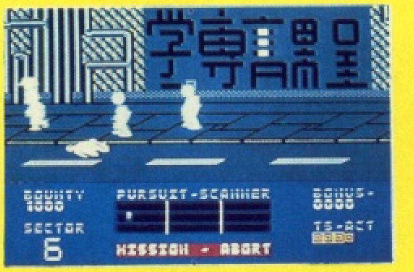
Unfortunately the game was nowhere near completion and had very little gameplay. When the finished product arrived I eagerly loaded it.

I suppose it was inevitable that the game couldn't live up to the film, but this game really is a disappointment. Firstly CRL seem to have perfected a Spectrum emulation program, and secondly the game is really repetitive.

Basically you must travel around various 'Sectors' selecting 'Replidroids' which you must then retire. The first map shows you as a diamond and you are helped by a variety of scanners and a link to the police computer.

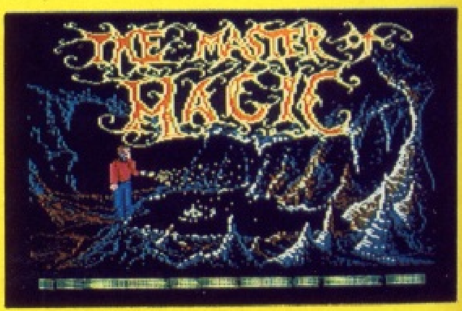
Once you have picked a replidroid to chase – varying in power from 1-6 – you are shown a display of a street, and having climbed from your skimmer you must run along the street, dodging cars and innocent bystanders, and retire the replidroid.

The graphics lack colour and you are displayed pretty badly, with Harrison Ford's overcoat looking uncannily like a dress. Musically the game is really nice with a section of the film score well represented, but this does not make up for all the other failings!



Price: £8.95
Graphics: **
Sound: ***
Playability: *
CCI Rating: Naff
Contact: CRL, CRL House, 9 Kings Yard, Carpenters Row, London E15 2HD. Tel:01-533 2918

CRISP



MASTER OF MAGIC

This game, the third in Mastertronic's MAD (Mastertronic Added Dimension) range, is yet another good value product. If you compare this type of game at £2.99 with Ultimate's latest at £10, you really can see why Outlaws has received such a lot of criticism.

Richard Darling, the programmer behind this game, has realised in time that to create a successful game in 1986 you need to combine talents, and as such he has used Rob Hubbard to do the sound (more later) and James Wilson to create the graphics.

The game places you as a character on the screen (represented by a yellow dot), and you must move about a maze, which expands in the direction you travel. Along the way you find various objects that will be of value (potions, scrolls etc) and also you confront various evil characters that will do their best to stop you from proceeding any further. To succeed you must use your spells to the full, and collect weapons and other useful items.

Graphically the lower half of the screen is truly excellent, with some really nicely defined characters. The music is, although not his best, a true Rob Hubbard Classic – and can do no harm to his already respected reputation.

Overall this is another good game from M'tronic, and at £2.99 it must be one of the best value games around.

Price £2.99
Graphics ***
Sound *****
Playability ***
CCI Rating CRISP.
Contact: Mastertronic, 8-10 Paul Street, London EC2. Tel: 01-377 6880.

· AIR · COMBAT · EMULATOR ·

· BY CASCADE GAMES ·

1-3 Haywra Crescent Harrogate

£10.95
INC. **FREE** WATCH
AND POSTAGE

THE FASTEST GAME ON TWO WINGS!

AND A FREE MULTIFUNCTION CALCULATOR WATCH

The AIR COMBAT EMULATOR, packed with exciting features, is by far the fastest, most realistic flight simulator available. For the first time on a home computer, feel what it is **really** like to fly a high performance military jet and engage tanks, missiles, ships, helicopter gun-ships and two types of cunning intelligent enemy aircraft.

Featuring over 300 sprite images, ACE has the smoothest, most detailed cockpit view of hills, trees and other ground objects ever achieved thanks to specially developed Dynamic Graphic Technique (D.G.T.©) allowing sensational high speed **solid** 3D graphics.

In combat, your head will spin as you struggle with the help of the advanced avionics which include a rear-view camera and radar, to stay alive long enough to do some damage to the enemy.

The unique two seat flying option (pilot, navigator/weapons man) and **Synchro Speech**© which passes vital aircraft condition information to the flight crew without freezing the action combined with dynamic tactical map, take offs and landings, summer, winter and night-time flying and a remarkably realistic in-flight refuelling option makes ACE the ultimate AIR COMBAT EMULATOR.

ACE SCENARIO

A vast invasion fleet has landed on your southern shores and discharged scores of tanks supported by helicopter gun-ships and protected by mobile surface to air missiles. Squadrons of enemy fighters give the enemy forces air cover. Advancing ruthlessly they are conquering your homeland, facing no opposition.

You are the last fighter pilot with only three A.C.E. Mark 2.1 multi role All Weather All Terrain AWAT© combat aircraft. Based at an allied airbase, your task is to attack and destroy the numerically superior enemy land and air forces and drive them from your shores. The final stage of the conflict, having already destroyed the enemy land forces and shot down their air force, is to sink the enemy fleet as it evacuates its defeated army.

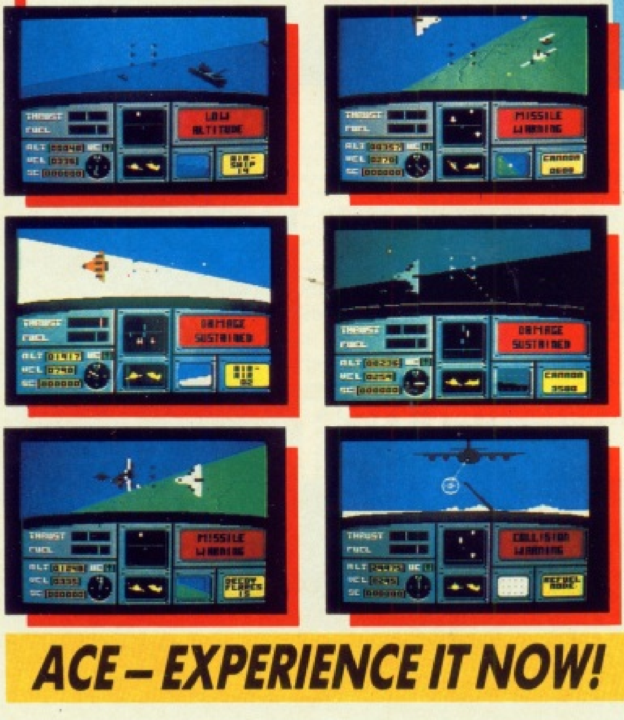
ACE – EXPERIENCE IT NOW

Every computer game fan will love ACE – just look at these features:-

- 100% optimized machine code uses all available memory.
- Featuring Dynamic Graphic Techniques [D.G.T.©]
- The smoothest, fastest and most detailed cockpit view of any flight simulation.
- Views of hills, trees, tanks and other ground objects. Aerial combat, ground attack and naval attack.
- **Synchro Speech**© ie. the speech does not freeze the action.
- Two seat option – fly and fight with the aid of a friend.
- Sensational 3D solid (not boring wireframed) graphics.
- High score saving system.
- AWAT© operation (All Weather All Terrain).

* Note due to memory limitations ACE on the C16 and VIC20 (+8K Ram) do not have any ground objects.

FREE 20 KEY MULTIFUNCTION CALCULATOR WATCH
• 12/24 Hour Time Mode • Alarm Mode
• Calendar Mode • Calculator Mode



Screen shots are for CBM 64 version. Other versions may vary.

ACE – EXPERIENCE IT NOW!

FREE!!!

Order ACE today and receive this fantastic
20 KEY MULTIFUNCTION CALCULATOR WATCH

ABSOLUTELY FREE!!!

PRICE **£10.95 (CBM 16 and VIC 20 £9.95)**

Postage FREE in U.K. Add £1 for overseas orders.

Allow 28 days for delivery.

I enclose cheque/postal order for (£..............................) made payable to Cascade Games Ltd.

Or through any Post Office by Transcash (Giro No. 655 6655).

For even faster ordering when charging to Access, Barclaycard and Trustcard Visa use our 24 hr service (Tel. 0423 504663).

ENTER CREDIT CARD NO. IN BOX:-

VISA

☐ C= 64 ☐ C= 16 ☐ C= VIC 20 (with 8K RAM expansion)
☐ C= PLUS 4 ☐ C= 128

Please tick box

NAME ____________________

ADDRESS ____________________

POSTCODE ____________________

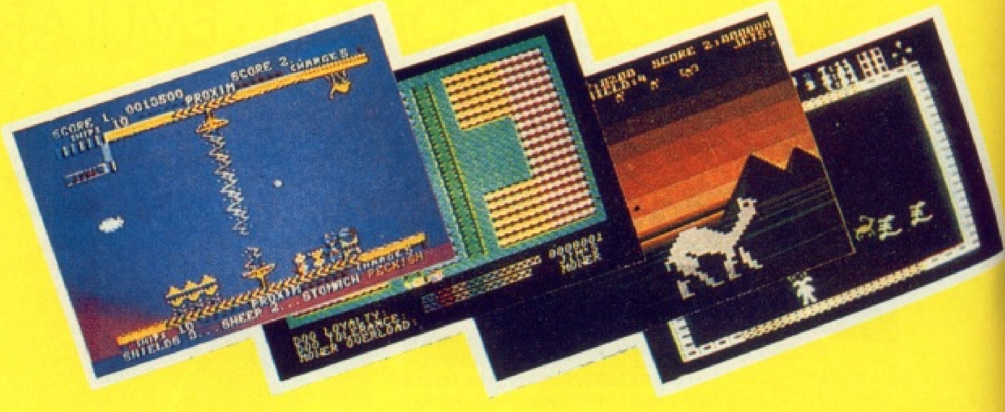
COUNTRY ____________________

Please complete and send to:-
Cascade Games Ltd.
1-3 Haywra Crescent
Harrogate HG1 5BG. England.
Tel. (0423) 504663
Registered No. 1755554

cascade

CCI/3/86

MEGA



YAK'S PROGRESS

Basically this is a compilation tape with eight of Jeff's 'classics' for the 64. Each of the games show Jeff's progression through the quality of ideas as well as execution, and for £9.45 on cassette for the two tapes and notes from the Hippy himself, it has to go down as mega-value for money.

The games included are; AMC, Matrix, Hover Bovver, RMC, Sheep in Space, Megagalactic Llamas battle at the edge of time and Ancipital. If you're a Minter fan you'll have these games anyway, but if not – and you want to get eight games that between them give endless nights of enjoyment, then this is certainly for you.

Soon Jeff will be starting on a new game for the 64, and if it manages to improve on Batalyx, it should really be worth waiting for – let's just hope he doesn't break his neck on the slopes before it's finished!

Price:	£9.45 twin cassette £11.95 disk
Graphics:	** — **** (dependant on game)
Sound:	** — **** (dependant on game)
Playabiltiy:	****
CCI Rating:	MEGA

Contact: Llamasoft, 49 Mount Pleasant, Tadley, Hants. Tel: 07356 4478.

10/10
PASSED
CRI
100%
YUK!
IFFY
PATHETIC!
GREAT
NAFF
MEGA
FAB
FLOP
SICK
AWESO
BEST
IS THIS A JOKE!
STINKS
FAIL
BIG
ZERO
SILLY
BEST YET
DODGY

AWESOME – few and far between, but a must!

MEGA – excellent, one of the best games this month

CRISP – very good, a game that we all enjoyed – truly playable

IFFY – good, but should be tried first

DODGY – not one of our favourites, but had some redeeming points

NAFF – pretty bad, not really worth a look

PRE-BASIC – the pits, not worthy of the tape it's on!

VIZAWRITE
PERSONAL WORD PROCESSOR

Classic 128

VizaWrite **Classic 128** is successor to the best-selling **VizaWrite 64**, which **THE TIMES** featured again and again in no less than three articles on word-processing! VizaWrite **Classic 128** is a **high-performance, easy-to-use** word-processor especially designed to exploit the enhanced features of the Commodore 128 computer... the speed, the memory capacity, the 80-column display, the extended keyboard... to give you the full capability of a **dedicated** word-processor station, **without** the expense!

Professional word-processor users expect their document to be **formatted as they type it**, into pages... VizaWrite **Classic** does this, **instantly**! There's no need for 'output to video' before printing... your document is always displayed **exactly as it will be printed**. Tabs, indints, centering and text columns are always in view... clearly presented, easily altered!

EDITING & PROOFING...

- **Massive 55K text area**, with text file linking for **unlimited** output
- **Integrated** spell-checker/proofreader with 30,000 word **disk dictionary**
- **Full function calculator**, with add, subtract, divide and multiply... directly, or using figures in your text, plus full **row-and-column** arithmetic
- **Copy, move and delete** by character, word, sentence, paragraph or page
- **'Pull-down' menus** for easy control
- Full screen and document **scrolling**, up to **240 character** page width
- **Find/replace** any character sequence
- **Merge** from most other word processor files directly into a document, and from ASCII **spreadsheet** files
- **Glossary area**, for quick insertion of frequently used phrases to your text

VIZAWRITE Classic 128

'A creative writer's dream...' VizaWrite review in THE TIMES

FORMATTING...

- Page-based **pre-formatting** ('What-You-See-Is-What-You-Get')... with **word wrap** and instant text formatting. Altering your layout is **easy and immediate!**
- Supports **80-columns** in both colour and monochrome, with full colour control.
- Runs in **128 FAST** mode
- Compatible with **VizaWrite 64**
- True **'Newspaper Style'** columns, with variable width control and full editing and printing features
- **Format lines** are used to set margins, tabs, indentations and column drops
- Easy-to-remember **format symbols** for tabs, indents and column processing
- **Automatic** paragraph indentation, numeric tabbing, right alignment, centering and justification

VIZAWRITE Classic 128

'Almost perfection...' VizaWrite review in YOUR COMMODORE

PRINTING...

- **Multi-line** headers and footers with **automatic** page numbering
- Multiple and collated **print copies**
- Simple and selective **mail-merge**, print labels up to 4 across
- Mail merge can use information from **VizaStar** database files
- Supports **Commodore** printers, and most **parallel** or **RS232** connected printers including JUKI, STAR, BROTHER, SPINWRITER etc.
- **Full proportional space** printing with JUKI, BROTHER and other DIABLO-compatible daisy wheel printers, and HP-compatible laser printers
- Built-in **proportional space NLQ character fonts** for CBM and EPSON dot-matrix printers and compatibles

VIZAWRITE Classic 128

'I liked VizaWrite immensely...' review in COMMODORE USER

VizaWrite **Classic** has **every** essential professional word-processor feature... bringing document preparation and printing to new levels of perfection. Enormous **55K** text area, **pull-down menus** for ease-of-use, true **'newspaper style'** columns, **'near letter quality'** dot-matrix printer fonts, true **proportional space** printing, phrase glossary, full function **calculator** with row-and-column arithmetic, fully integrated **spelling checker**... VizaWrite **Classic**, for fast and reliable document content, excellently presented... an easy-to-use wordprocessor with **Classic** features!

- **VIZAWRITE 'CLASSIC' 128 (INTRODUCTORY OFFER)** ~~£99.95~~ £85.00!
- **VIZAWRITE 64 'PROFESSIONAL' (INCLUDES VIZASPELL)** ~~£99.95~~ £85.00!
- **VIZAWRITE 64 (DISK)** ~~£79.95~~ £67.95! **(CARTRIDGE)** ~~£89.95~~ £78.95!
- **VIZASTAR 64 (DATABASE/SPREADSHEET) XL4:** £74.95! **XL8:** £115.95!

Simon's Basic	~~£50.00~~	£35.00
JetPack (disk)	~~39.95~~	29.95
Master 64 (disk)	~~69.00~~	39.00
SuperType (disk)	~~25.95~~	21.95
SuperType (tape)	~~19.95~~	16.95
SuperBase Starter	~~39.95~~	29.95
SuperBase 64	~~79.95~~	69.95

SuperBase 128	~~£99.95~~	£85.00
SuperScript 64	~~69.95~~	58.95
SuperScript 128	~~79.95~~	69.95
EasyScript to SuperScript upgrade- send disk and manual cover		44.95
SuperScript to SuperScript 128		57.95
SuperBase to SuperBase 128		67.95

WANT IT TOMORROW??? CALL US TODAY!!! ON 01-546-7256

Prices include VAT and POSTAGE and are correct on going to press. Order by post or phone, using cheque, Access, Barclaycard or postal order. Despatch is by same day 1st CLASS post. Product data available on request, or phone for advice if in doubt. [REF A36]

Calco Software

LAKESIDE HOUSE, KINGSTON HILL, SURREY, KT2 7QT. TEL 01-546-7256

Evesham Micros
THE UTILITY SPECIALISTS

FREEZE FRAME

THE NEW GENERATION OF BACKUP METHODS HAS ARRIVED

"Freeze Frame" is the product that '64 owners have been waiting for. At the touch of a switch "Freeze Frame" will take control of your computer and freeze the program in memory, allowing you to **SAVE it to tape or disc**. The uses are endless, but typical applications are:

TAPE TO DISC: Use "Freeze Frame" to freeze a memory resident program and transfer it to disc **regardless of the type of loading technique used**. (Disc save incorporates a fast loading system.)

DISC TO TAPE: Memory resident disc programs can be backed up onto tape. (Saved at turbo speed.)

DISC TO DISC: It is possible to make a self contained back up of disc based programs that will both **load at high speed** and **allow the rest of the disc to be used as normal**.

TAPE TO TAPE: Tape back ups can be made at turbo speed with just one tape deck.

CUSTOMISE PROGRAM: The process can normally be actuated at **any stage** of a program, this means you can SAVE a program at a critical stage and restart at that point in the future!! If you like putting "POKES" into programs for extra lives etc. you can save a version with these active.

In fact "Freeze Frame" is the **ultimate utility**, it works on the program in memory and allows you to make a back up of that program onto tape or disc. The beauty being that the saved version is fast loading and in the case of disc backups no longer has drive damaging DOS errors. The process is **completely automatic** no knowledge of BASIC or machine language is required, just follow the prompts and the simple instructions for **amazing results**. **"Freeze Frame"** is a hardware "device" that plugs into the cartridge port of the '64. It does **NOT** dump the entire contents of memory. Just the **working program and parameters**. Programs converted run **independently** of the hardware. It is also compatible with the "128" in '64 mode and 1570 disc drive. In tests "Freeze Frame" has proved 100% successful with software tested.

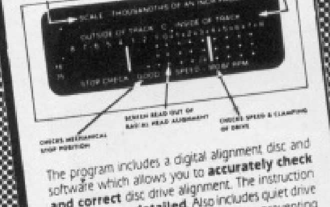
ONLY £39.95

WARNING: Don't be misled by other adverts, if you want to transfer turbo load programs to disc, software only utilities are inadequate. They suffer from a variety of drawbacks including poor success rate, awkward to use, greedy on disc space and overpricing.

ALIGNMENT PROBLEMS?

1541 PHYSICAL EXAM £39.95

IS YOUR 1541 HEALTHY?
OR WOULD ITS PHYSICAL EXAM
LOOK LIKE THIS ONE?


ACCURATE MICRO ADJUSTMENT
USES SCREEN DISPLAY NO SPECIAL TEST EQUIPMENT
DIRECTION OF STEPPER MOTOR MOVEMENT
SCALE - THOUSANDTHS OF AN INCH FROM TRACK
OUTSIDE OF TRACK C INSIDE OF TRACK
STOP CHECK GOOD
SPEED
RPM
SCREEN READ OUT OF RADIAL HEAD ALIGNMENT
CHECKS SPEED & CLAMPING OF DRIVE
CHECKS MECHANICAL STOP POSITION

The program includes a digital alignment disc and software which allows you to **accurately check and correct** disc drive alignment. The instruction booklet is **very detailed**. Also includes quiet drive stops to **stop** that "hammering" thus preventing further problems.

ONLY £39.95

Quickdisc+
FAST LOAD PLUS UTILITY CARTRIDGE

Get a **QUICKDISC+** cartridge plugged into your '64 and your 1541 will really **start to perform**. So many features per pound (sterling) that you will hardly believe it. Includes the following....

Fast LOAD (four to five times normal speed). Works with majority of protected software. Can be switched in and out from the keyboard.

Fast SAVE at twice normal speed.

Fast Format takes just 20 seconds.

Fast Backup copies an entire disc in four minutes. (Not heavily protected software.)

Fast File Copier for selective fast copying.

Improved DOS commands (DOS 5.1) makes for easy use of the disc drive e.g. $(RETURN) will LOAD and display a directory without overwriting BASIC. SHIFT RUN/STOP will LOAD "0:*",8,1 etc. etc. very very useful.

Incorporates Centronics Printer software (user port) **with CBM graphics** capability. See "Commodore Connexion" for suitable lead.

A RESET switch is fitted. (We have found this to be "unstoppable". it also preserves the tape buffer.)

NO MEMORY IS USED by this cartridge. It is totally "transparent" and uses special switching techniques.

"128" compatible in '64 mode.

Now the price. No not £49.95, it's **not even half** that much. Can you afford to be without QUICKDISC+

ONLY £19.95

No extra connections are necessary with QUICKDISC+ and unlike most similar products it is compatible with printers and second drives.

DISC DISECTOR V4.0

Disc-Disector

Now the **fourth generation** of the countries **leading** disc back up/utility package is available. Various improvements have been incorporated to re-establish "Disc Disector" as the **ultimate weapon**. Of particular importance are the following.

"Evesham Turbo Nibbler" is the **latest version** of the infamous "Evesham Nibbler" now boasting **even more power and speed**. Will now copy even the most highly protected discs in **3–4 minutes**. Handles all the latest types of disc protection **completely automatically**. At the time of going to press this program copied **every disc program available for testing** including the latest in games and business software.

"Dual Driver Nibbler" allows the use of two drives to make **even faster back ups**. Incorporates device number change software so no hardware mods necessary.

"Nova Transfer" will **transfer to disc** the latest Nova Load programs including **multi stage loaders**. A very useful utility that is of particular use for the programs that need to load more information as the program progresses.

As well as these important newcomers all the old favourite utilities which have helped earn "Disector" such a large following are included. These include **Menu Maker (selective)**, **Fast Format**, **Unscratch**, **Disc Monitor**, **Disc Orderly**, **Fast File Copy**, **Index**, **Index**, **plus several other useful utilities**.

The whole package is menu driven and has its own fast boot system built in for your convenience. Pays for itself the first day you receive it.

ONLY £29.95

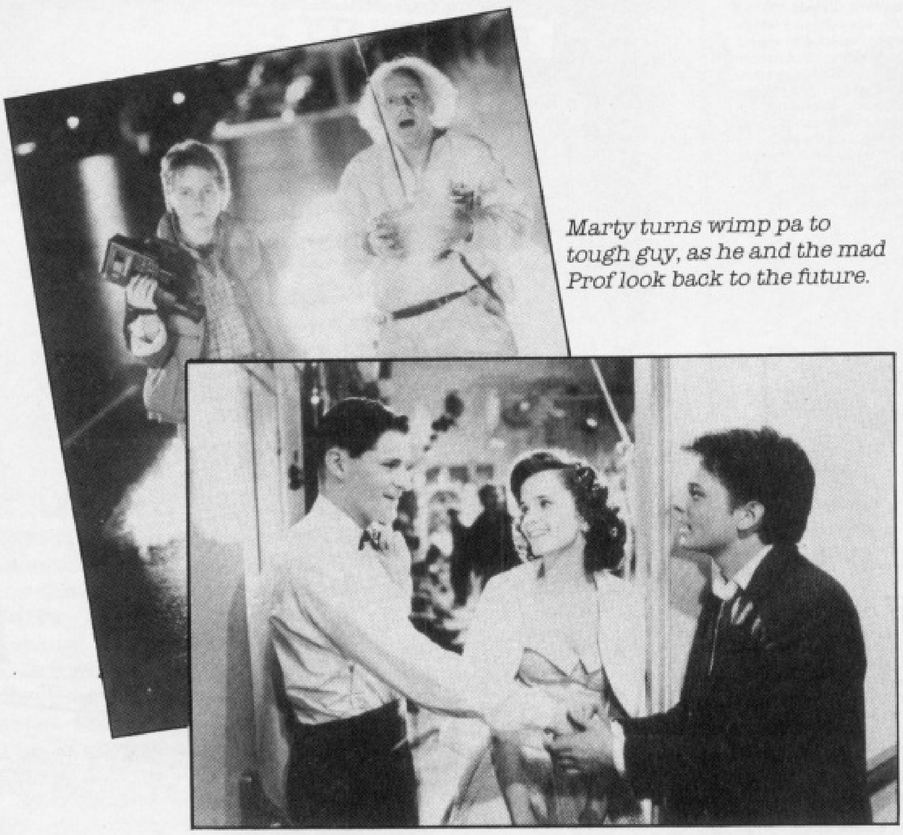
Customers with earlier versions may return them along with a payment of £9.95 to receive V4.0

All programs are CBM 128 and 1570 compatible.

All prices include P&P and VAT. Send cheque, Postal Order of Credit Card No. Credit Card order accepted by phone. Callers welcome. Wide range of goods stocked. Trade enquiries welcome. European orders send price as advertised. Outside Europe £2.00 for airmail. Mail order to Evesham Shop please.

EVESHAM MICROS
BRIDGE STREET, EVESHAM,
WORCS., WR11 4RY.
Tel: 0386 41989

MICRO CENTRE
1756 PERSHORE ROAD,
COTTERIDGE, BIRMINGHAM.
Tel: 021-458 4564



Marty turns wimp pa to tough guy, as he and the mad Prof look back to the future.

BACK TO THE FUTURE – The Film

Think about it – if your parents hadn't met, you wouldn't be here today! The past controls what is happening to you now and what is to come... In "Back To The Future" a boy called Marty gets catapulted back into the past to 1955 and finds that not only is he stuck there for a week, but that if he doesn't make sure that his parents meet and fall in love he won't be born – a big responsiblity, huh!

This particular task is made all the more difficult by the fact that his mother as Marty puts it "gets the hots" for him and that his father is a wimp who attracts bullies instead of girls, so he has to fix the past so his own future really will happen! Time – as they say – is of the essence.

As a lover of films like "The Time Machine" and books like Heinlein's "Door Into Summer", "Back To The Future" was a sheer pleasure for me to watch. And the suspension of disbelief which is necessary for the enjoyment of fantasy, which for so many films has to be very forcibly maintained, was in this film in no way at all an effort, as I quickly got drawn into the fast moving believable plot.

Marty, played by Michael J Fox, put up an excellent performance both polished and extremely energetic, daringly skateboarding everywhere and doing a very good Chuck Berry strut. He was accompanied by an inspired piece of casting of Christopher Lloyd as the zany proffessor (a familiar face as the crazy mechanic from the television series "Taxi"). Even the music was great, featuring the track by Huey Lewis and the News – "Power of Love".

Back To The Future? If you havn't seen it yet, now is the time. If you've gone already, like me you'll probably want to go back again.

BACK TO THE FUTURE – The Game

If you enjoyed the film (Yes! Yes!!) and you liked the music (Yes! Yes!) and maybe you're even into skateboarding (Yippee!), then this game could quite well be for you!

Although I have only seen the preview (courtesy of Activision's own Dynamite Dan – Andrew Wright) I can safely say that the game could either be brilliant, or not!!

The object of the game is to get your parents (who aren't yet) together, and stop your mother (who isn't yet) from falling in love with you. You must stop Biff (the bully) from causing you trouble. Finally you must do all this in time to make sure that your two pictures, one of you and one of your family (yup, they aren't yet either!) are completed rather than disappearing.

As Marty McFly you really have got a difficult job on your hands, but to help you various objects are spread around the playing area. These include Love Poems – to help your father (Who isn't – ahh you know!), Cups of Coffee, an Alien suit to scare your Pa into action, and a guitar so you can do your Chuck Berry, impressions.

To accompany the game you have a rendition of Huey Lewis and the News' – The Power of Love, produced for Electric Dreams by Rocksoft.

To finish the game you must complete the pictures and then get back to the converted Delorean that can take you......BACK TO THE FUTURE!!! (Good ending eh???).

One thing you can be sure, "Well, it's got a lot of potential".

BACK TO THE FUTURE

Compumart

Mega Deals

Best Prices for BLANK DISKS in the UK.

Top Quality 5¼″ Bulk Packed Disks
(Hub-Ringed and in White Envelopes with a Lifetime Warranty)

FREE!!! **Plastic Library Case worth £2 when you buy 10 Disks**

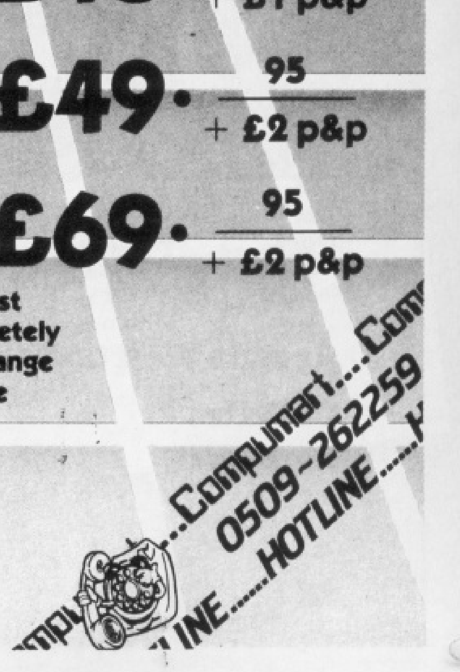
FREE!!! **Perspex Disk Storage Box worth £10 when you buy 50 Disks**

10 – 5¼″ SINGLE SIDED/DOUBLE DENSITY BLANK DISKS (with FREE case)	£9.95 + £1 p&p
10 – 5¼″ DOUBLE SIDED/DOUBLE DENSITY BLANK DISKS (with FREE case)	£13.95 + £1 p&p
50 – 5¼″ SINGLE SIDED/DOUBLE DENSITY BLANK DISKS (with FREE Storage Box)	£49.95 + £2 p&p
50 – 5¼″ DOUBLE SIDED/DOUBLE DENSITY BLANK DISKS (with FREE Storage Box)	£69.95 + £2 p&p

GOODS DESPATCHED: Same day 1st Class Post
MONEY BACK GUARANTEE: If you are not completely satisfied with your purchase we will either exchange your disks or give a FULL REFUND – that's the Compumart Guarantee.

Please send cheques/postal orders to:
Compumart, (DeptCCI)
71 Gracedieu Road, Loughborough
Leics. LE11 0QF Tel (0509) 262259

Access
VISA



TOP TWENTY

	GAME TITLE	CHANGE	COMPANY	PRICE (£)
1	Commando	NEW	Elite	9.95
2	Mercenary	NEW	Novagen	9.95
3	Rambo	NEW	Ocean	8.95
4	Winter Games	DOWN	U.S. Gold	9.95
5	Transformers	NEW	Ocean	8.95
6	Fight Nite	NEW	U.S. Gold	9.95
7	Arc of Yesod	NEW	Odin	8.95
8	Zorro	NEW	U.S. Gold	9.95
9	Superman	NEW	Beyond	9.95
10	Quake Minus One	NEW	Beyond	9.95
11	They Sold a Million	DOWN	Ocean	9.95
12	Dynamite Dan	NEW	Mirrorsoft	8.95
13	Yabadabadoo	NEW	Argus Press	7.95
14	Goonies	NEW	U.S. Gold	9.95
15	Revs	NEW	Firebird	14.95
16	Little Computer People	DOWN	Activision	9.99
17	Critical Mass	NEW	Durell	8.95
18	The Young Ones	NEW	Orpheus	7.95
19	Gyroscope	NEW	Melbourne House	8.95
20	Rambo (disc)	NEW	Ocean	12.95

BUBBLING UNDER

Arcade Hall of Fame	U.S. Gold	9.95
Outlaws	Ultimate	9.95

Compiled by CCI from leading distributors

The Micro Maestros

Musical genius Rob Hubbard is the second sound programmer to be featured in our music maestro series. Responsible for Monty on the Run, V8 and Commando, Rob's hits keep coming

Name: Rob Hubbard

Age: 30

How long have you been a freelance music programmer?: "Well I've been doing it since I got my 64 around three years ago, but I've only been successful for about 6-7 months"

Musical Taste: "I try to take notice of almost everything, but I really like Chick Corea, classically I like Ravel"

Who have you done work for?: "I've done work for a variety of companies including Mastertronic, Martech, Gremlin, Elite, Firebird, Alligata, as well as a few others."

What equipment do you use?: "For composing and developing tunes I use a small Polyphonic keyboard, and I write things down on manuscript paper. To actually enter it into the 64 I use my own music program, although this is really little more than a machine code source file"

Do you consider yourself a Musician or a Programmer?: I'mdefinitely a musician, I do gigs around the Newcastle area as a musician, computers really come second"

What's the best soundtrack you've done?: "Really it's a toss up between Martech's 'Crazy Comets' and Mastertronic's 'Master of Magic'. I also really like the work I've done for Gerry the Germ goes Bodypopping"

What's your favourite soundtrack apart from your own?: "Really it must be Rambo's loading music, the effects on that are really special, otherwise I really like Activision's Master of the Lamps."

How long does it take to program a soundtrack?: "Generally I'd like to have between two and three weeks to do a track, meaning I can get everything right. On the other hand I did the Commando music in 24 hours solid!"

How much RAM is allocated to your soundtracks?: "Really it depends on what's available. The most I ever had was 5.5K for Monty on the Run, but for Master of Magic I only had 3K, but still it goes on for nearly 6 minutes."

What does the future hold for you?: "That's a really difficult question I'd like to get an Amiga as soon as possible and progress onto doing work on that. Hopefully I'll have one before March."

How many soundtracks have you done?: "I suppose I've done around forty different pieces which were spread over about twenty different games."

I must thank Rob for being so helpful, and I look forward to some of his new releases, especially a couple he mentioned by Firebird. I also cannot wait for him to get hold of an Amiga, that should produce some really special results!

Francis Jago

THE FINAL CARTRIDGE

THE FIRST OUTSIDE OPERATING SYSTEM FOR THE CBM 64 *

UTILITY
OF THE YEAR
1985
THE CCI
OSKARS
1985
THE FINAL
CARTRIDGE
HOME & PERSONAL COMP
£45

This new operating system built in a cartridge does not use any memory and is always there. Compatible with 98% of all programs.

DISK TURBO - 6 times faster loading - **8 times faster saving.**

TAPE TURBO - 10 times faster, even **with files - normal Commodore commands - compatible with standard turbo's.**

ADVANCED CENTRONICS INTERFACE - compatible with all the wellknown centronics printers and Commodore printer programs. Prints all the Commodore graphics and control codes (important for listings).

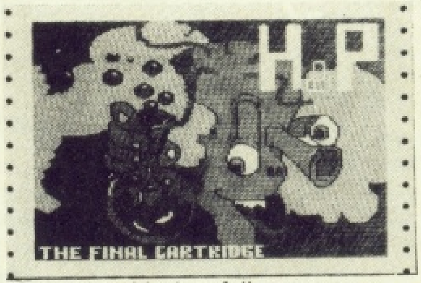
SCREEN DUMP FACILITIES - of lowres Hi-res and multicolour screens!! Prints full page with 12 shades of grey for multicolour pictures even from games and programs like Doodle, Koala pad, Printshop etc. Searches automaticly for the memory-address of the Picture. Special version available for the CBM 801 and 803 printers.

24K EXTRA RAM FOR BASIC-PROGRAMS AVAILABLE: Two new commands ,,Memory read'', ,,Memory write''. They move 192 bytes with machinelanguage-speed anywhere in the 64K Ram of the CBM 64. Can be used with strings and variables.

BASIC 4.0 COMMANDS - like Dload, Dsave, Dappend, Catalog, etc.

BASIC TOOLKIT - with Auto, Renum (incl. Goto and Gosub), Find, Help, Old, etc.

* works with C128 in the 64 mode.



Original multicolour full page screen dump print out.

PREPROGRAMMED FUNCTION KEYS: Run, Load, Save, Catalog, Disk commands, List (removes all list-protections).

KEYBOARD EXTRA'S - Allows you to delete part of a line; stop and continues listings; move cursor to lower lefthand corner. Pokes and Syscalls in Hex. Typ-command operates your printer as a typewriter.

COMFORTABLE EXTENDED ML. MONITOR: - with relocated load scrolling up and down. Bankswitching, etc. - **does not reside in memory.**

RESET SWITCH: - resets to monitor; resets with old, resets to Hi-res printing; resets every protected program.

ON/OFF SWITCH - we hope you never need that one.

FREEZE FRAME

Stops and continues almost every program and allows you to make a **total back up** to disk or tape automatically.

14 Days money back guarantee if you are dissatisfied.

12 Months replacement guarantee.

H&P COMPUTERS

U.K. ORDERS Available by the wellknown Commodore Dealers or directly from

H & P Computers
9 Hornbeamwalk
Witham Essex CM8 2 SZ England d.
Telephone: 0376 - 51 14 71.

copyright and registered trademark H&P computers
Wolphaertsbocht 236 3083 MV Rotterdam Netherlands. Tel.: 01031 - 10231982 Telex 26401 a intx nl

Diary of an AMIGA

Some of you may recall that fateful day in the summer of 1985 when PCW magazine published an article penned by the redoubtable Guy Kewney about the forthcoming AMIGA-PC from Commodore. We had all heard and read a little about this mighty machine but Kewney's article was the first to give us a relatively detailed insight. The more I read the article the stronger my intention of purchasing one became.

I avidly scanned many magazines including sending off for copies of American imports, pestered many people all in a concerted effort to glean as much information as possible about the AMIGA. By the time the PCW Show came around I had formed the conclusion that if the AMIGA ran as well as it read, it was the machine to buy.

Up until the announcement of the AMIGA, I did have my eyes on the ATARI 520ST; I would imagine that this being much the case with most serious users of home micros. I looked forward to seeing this in the flesh (or should it be plastic?), at the PCW Show. I arrived at Olympia and battled with the crowds, heat and humidity and was dutifully impressed with the ATARI machine. However, since I was lending a hand on somone's stand for the week, rumours that the AMIGA was at the Show began to reach my ever-open ears.

The sources of the rumour seemed impeccable and by the second day I had tracked down the location of the AMIGA demonstrations and formulated a rough plan of how to get past the Commodore guards. All that remained was to carry it out. Faint heart never won a fair lady, or so they say and since my plan was based on 99% bravado and 1% cheek, by the time I had managed to enter the hotel suite where the demonstration was being held, I felt sure that the proportion of these ingredients of my plan had reversed.

Amiga Demonstration

My tenacity was well rewarded; a short video of the launch in New York, a quick talk by Gail Wellington and then with a sleigh of hand worthy of Paul Daniels, off with the covers and there they were. Stifling my natural instinct to race over and start bashing away at the keyboard, I showed incharacteristic restraint and casually sauntered over with the air of a battle-hardened veteran – besides I didn't want to be first to crash the machine! Yes, this was the one for me, the more I saw of AMIGA merely stiffened my resolve to buy one at the earliest opportunity. To the amazement of the others on the stand I stopped sneaking off to haunt the ATARI area and started to bore everyone by extolling the AMIGA and how much better it was than the 520ST.

"A dream of a computer," is how the Amiga has been described. It was love at first sight for Bill Donald and this is his story!

I hadn't seen much of my wife Janet during the week of the PCW Show and when it was over I mentioned that I had seen the AMIGA. Amid the collective groans from her and the cat I announced that I intended to buy one just as soon as I could. Applying the normal feminine instinct of domestic practicalities she asked "where are you going to put it, the amount of stuff you already have takes ALL of the spare room, you couldn't swing a cat in there......besides where is the money coming from?" demonstrating further understanding of the more mundane aspects of life in 1985. I quickly shrugged off the objections.

"How much were you thinking of Mr.Donald?" asked the bank manager between sips of Maxwell House and pages of my proposal cunningly enhanced by judicious of the the Koala Pad and Epson RX80 bit-map graphics. Years of training and dedication to the tradition of the banking equivalent of the stiff upper lip enhanced by several successful rounds of verbal and financial jousting with me suddenly slipped like a mask when I tried to make the phrase "Two thousand should be sufficient" sound like a mere bagatelle while maintaing an earnest but serious face at the same time.

He let go of the copy of my current account statement and then opened one of his drawers and for an instant I had a vision of newspaper headlines reading something like 'bank manager shoots customer' or 'bank horrified at managers suicide in front of customer', which quickly passed as he took out a clean tissue and carefully returned my current account statement into it's folder and then equally carefully began to dab the red ink from his fingertips. I will draw a veil over the rest of the proceedings. However, later in October he relented and having once more obtained the necessary signature regarding the sale of my life, limb and soul gave me the go-ahead.

Collecting the Amiga

I swiftly conveyed my intentions to Commodore at Corby and indicated that I would like an AMIGA as soon as the funds were made available. I received the distinct impression that I was not being taken seriously and it was only upon my arrival at Corby on 8 November that they realised that I did actually want one. The scene in the reception was one I will forever relish; on being asked how would I be paying the £1776.33 I replied "cash!". However disaster struck in the form of no monitor. Some foul-up in delivery rates, problems with the Customs and Excise, a points failure at Clapham Junction, you name it, an excuse was forthcoming. They assured me that having taken the money for the monitor an early delivery would take place.

I departed from Corby rather unhappy at this, wondering as I drove back to Kent down the magnificent M11 how to get this one past the wife. "What, you mean you have paid nearly £2,000 and you cannot even use it?" she hissed that evening. My wife can be very hurtful, accurate but hurtful, oblivious to the pained expression on my face. I attempted to divert the issue into the huge amount of reading that would be necessary to understand the AMIGA. Corby had managed to provide several volumes of manuals referring to various parts of the system and they were comprehensive to say the least. She was still not amused!

I had, by now become a victim of my own mouth; a lot of friends had, on previous occasions been bored rigid by my own conversations on this wonder-machine and since the AMIGA had arrived chez Donald, they all trooped around to be suitably impressed. Needless to say, they all trooped back out again singularly unimpressed, "fancy door stop" or "expensive slab of plastic you have there Bill" were some of the kinder remarks passed. Your writer's credibility started to plumb new depths! With increasing difficulty I put on a brave face and continued ploughing through the manuals, if nothing else then at least I had a fair inkling of how to set up and run the AMIGA.

Multitudes of Manuals

Friday 29 November dawned bright and sunny and the post brought forth a receipted parcel from Commodore. My initial reaction was to assume that it was the fabled monitor but the parcel's size indicated otherwise. I quickly opened it and found large quantities of amendments to the existing manuals. This kept me occupied for a few hours until lunchtime was heralded with the growling arrival of a delivery truck.

The thought crossed my mind that probably one of the neighbours has bought another microwave oven thus providing oneupmanship at one of the innumerable Tupperware parties they have around here; "We've now got TWO microwave ovens Daphne, we keep the new one in the bedroom just in case Rod feels like a midnight snack."

I opened the door to be met with a very, very large box marked with the magic word 'monitor'. Resisting the temptation to open it there and then on the doorstep, I signed the note proffered at me by the Geoff Capes clone and rushed upstairs with the box to my inner sanctum. The moment of truth had arrived and I felt the ghosts of my wife, bank manager and friends looking over my shoulder all chortling with glee that it wasn't going to work. In the event it did and the welcoming image of a hand clutching a disk marked 'KICKSTART' caused me to issue a sigh of relief that must have been heard around most of Kent.

The Package

Before I go any further it would be as well to let you know just what I have received in exchange for the money. The standard machine comes with 256k RAM, internal 880k 3.5" disk drive, high resolution colour RGBA monitor, introductory literature, system disks and a version of Microsoft BASIC tailored to the AMIGA.

The AMIGA which I have is an enhanced configuration aimed at software developers. My machine has the plug-in RAM pack which gives it 512k RAM, an additional drive which is an external 880k 3.5" giving a total storage of 1.76MBytes, a full set of system documentation, various disks containing a 68000 assembler and monitor, a C language compiler, a BASIC interpreter (in this case by Metacomco), and some demonstration programs.

The documentation consists of the following:-

1. Introduction to AMIGA
2. Lattice C Compiler Manual
3. AMIGA DOS Technical Reference Manual
4. AMIGA DOS Developers Manual
5. AMIGA DOS Users Manual
6. AMIGA Hardware Manual
7. AMIGA ROM Kernal Manual
8. Intuition Manual

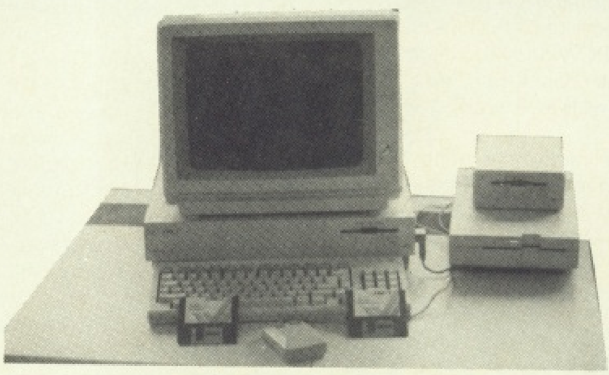
As you can see it is a step up from the C64 Programmers Reference Guide for both myself and Commodore; the volume of number of pages runs into the thousands rather than hundreds and this is STILL early days! It was because of this daunting weight of material on AMIGA that Commodore Electronics Ltd, (the parent company for the Western Europe Commodore companies) hereafter referred to as CEL, decided on the need for a conference to familiarise software houses and professional programmers with the facilities of the AMIGA.

The Conference

This was held at Eastbourne in early December 1985 and although at the time when I collected my AMIGA from Corby I had ignored the requests that it would be a good idea to attend this conference, a week later I soon realised that it would be VITAL, if I was to start writing about how the AMIGA works.

The imposing Victorian edifice of the Grand Hotel served as the backdrop to the conference and my initial impression was surprise at the large number of attendees and even more remarkable was the proportion of French, German, and Dutch – virtually every nation in Europe had someone there.

The conference started on Monday 2 December although there had been a 'welcome' buffet the previous evening. This gave me a chance to look for faces that I knew in the crowd. Thankfully, there were a few and the fact quickly emerged that not very many actually had an AMIGA. Those who didn't were largely sceptical of the machine, but those who did have one developed enthusiastic conversations and I was soon comparing notes.



One of the prime features of the Eastbourne conference was the introduction of some of the team responsible for the AMIGA. In time most of these names will become familiar to you and I suppose it gave them a welcome break from the Californian sunshine to be met with three solid days of British rain! We were issued with yet more documentation and using slide shows, demonstrations, question and answer sessions we were led through the full maze of the AMIGA. It was at times, pretty heavy going and the proceedings served to throw up yet more questions than answers. Anyone who has ever attended a training course, seminar or conference like this will know that the REAL benefits arise during the evening social functions and Eastbourne proved no exception to this. One of the attractions lay in the number of AMIGA's that Commodore had left up and running in one of the lounges. This meant that if you didn't feel like conversation you could try and capture an AMIGA and attempt to impress those who didn't know how to operate it!

One or two highlights of the conference that spring to mind were the demonstration of De-Luxe Paint by Tim Mott of Electronics Arts. This brought a new demension to the meaning of high – resolution graphics on a personal computer. The other was a simple program showing the text-to-speech facility and I remember the delight of Commodore's John Collins as some french words were keyed in and from out of the monitor speaker can "Bonjour Monsieur Collins, comment allez vous". All the more amazing when I learned that this program was written in BASIC!

Sceptics converted

By now of course, the sceptics had been well and truly converted and most of them made clear their intention of purchasing an AMIGA as soon as possible. In fact all of the machines that were in use at the Grand Hotel were bought and taken away at the end of the conference!

Eastbourne was exhausting mentally and physically. My evening activity of having long and invloved conversations in the lounges quite oblivious to the clock had started to take its toll, one memorable evening running through until 4.0 a.m. and by Wednesday I was all in.

I returned home to be a great deal more wiser about what the AMIGA could do and more importantly, how this could be done on my own machine. So far it has proved to be worth every penny I have paid for it and I have not regreted a minute of it. If there is one complaint it is the retail price of the double-sided 3.5" disks, circa £3.50 each, a far cry from the sub-£1.00 price we pay for 5.25" disks. I suppose as the smaller disk achieves more sales volume then the price will come down, but it hurts paying over £30 for a box of disks.

Whilst on the subject of money, I have been asked many times the question of the cost of the AMIGA. My own feelings on the matter are this; once you have actually seen or even better, used the AMIGA then the whole question of costs starts to dissolve in the sea of machine power. The Atari slogan of 'power without the price' paradoxically can be well applied to the AMIGA. We are still novices to the strengths inherent in the use of multi-tasking, to sound that makes the 6582 SID circuit take on the quality of a semi-strangled turkey, to graphics that are more often seen on dedicated CAD machines costing tens of thousands. AMIGA has power that subjugates price.

I'm just rubbing my hands over the prospect of AMIGA II already. Try to imagine a 68020 processor, internal 50 MByte hard disk, an output port spec as long as your arm, 2 MByte RAM; I must stop this day-dreaming or am I?

Insights Into the Plus/4 Part II

Bill Donald provides futher fascinating insights into the Plus/4, looking at second processors and networking.

In the previous article on the PLUS/4 (see January 1986 issue of CCI) we looked at the PLUS/4 hardware. In this article I want to examine further the internal routines and then move onto more esoteric topics such as second processors and networking employing the User Port. I hope that you find this of interest and value, particularly if you own a PLUS/4.

The bank switching of the PLUS/4 can be difficult to grasp because of the number of variations that are possible. The operating system compensates for this a little by the inclusion of three routines termed LONG FETCH (LNGFET), LONG JUMP (LNGJMP) and SERVICE INTERRUPT (LNGIRQ). These are located within the KERNAL address space and are available in whatever combination of banks you have selected.

Taking the first routine LNGFET, this can be found at address $FCF7 (64759) and its function is to transfer a byte from one bank to another. Applications for this could be storage and retrieval of high-resolution graphics data or array variables separate from those designated by the BASIC interpreter. LNGFET runs quite quickly and the speed could be improved by taking the main processor into fast mode which entails disabling the video output. There are faster algorithms available, but in the interest of program compatibility within Commodore 8-bit machines you would be well advised to stick with KERNAL routines. LNGFET works as follows:-

1. Disable machine interrupts.
2. Load accumlator with lo-byte of start address, go to step 3 and return, repeat with hi-byte of start address.
3. Store at $BE (FETPTR-lo) and $BF (FETPTR-hi) the destination in lo-hi order
4. Load accumulator with present bank selected (see previous article for details of this technique)
5. Load X register with destination bank combination.
6. Load Y register with offset derived by subtracting from base of selected bank to actual address selected.
7. Call LONG FETCH
8. Selected byte deposited into accumulator
9. Do what you like with it!

The structure of assembly language listing would look like this if you wanted to transfer a byte located at address $80AB from External Bank 2 whilst the PLUS/4 is configured as at power-up:-

```
SEI ; disable interrupts
LDA £$17 ; lo address
STA $00BE ; FETPTR lo-byte
LDA £$90 ; hi address
STA $00BF ; FETPTR hi-byte
LDA £$00 ; standard configuration – KERNAL and BASIC enabled.
LDX £$03 ; external 2 LOW with KERNAL enabled, BASIC disabled.
LDY £$AB ; i.e. $80AB – $8000 = $AB
JSR $FCF7 ; call LNGFET
STA $0C00 ; put the byte into the top left corner of the screen. Don't forget to re-enable the interrupts if necessary.
```

LONG JUMP, the second of the KERNAL routines is located at address $FCFA (64762). This is a very powerful and versatile function with unlimited possibilities, however, it does need to be used with care. The purpose of LONG JUMP is to execute a section of code located in another bank. I feel it would be presumptuous of me to describe any uses for a routine like this since I am asssuming that most readers who have stayed the course this far are not beginners where machine code work is concerned. For those of you who are particularly creative programmers I would suggest that you explore the area of input/output. LONG JUMP works as follows:-

1. Load the accumulator with present bank selected.
2. Load the X register with destination bank selected.
3. Store the address where the routine is located in lo-byte and hi-byte order in LNGJMP vectors located at $05F0 and $05F1 respectively.
4. Store in FETARG ($05F2) the value that you want to be avilable in the accumulator after you have called LONG JUMP.
5. Store in FETXRG ($05F3) the X register value after the routine entry time.
6. Store in FETSRG ($05F4) the status register value on return from the routine
7. Call the routine LONG JUMP.
8. Look into your accumulator, X register and Status register for the preserved values you specified.

Note how the routine uses vectors located in Page 1 rather than in Page 0, presumably because of shortage of space. This does build into the routine a certain amount of delay overhead and the Y register unfortunately is not preserved, so do not use this for anything important during the use of LONG JUMP. Here is a specimen assembly language listing which executes a routine located at $C2FF External Bank 1 with the PLUS/4 in normal power-up mode:-

```
LDA £$00 ; present bank configuration (see Part 1 of this series in January 1986 CCI)
LDX £$01 ; external bank 1 select procedure
LDY £$FF ; lo byte of routine location address
STY $05F0 ; put it into LNGJMP lo byte vector
LDY £$C2 ; hi byte of routine location address (i.e. $C2FF)
STY $05F1 ; put this into LNGJMP hi byte vector
STA $05F2 ; preserve the present bank configuration
STX $05F3 ; preserve the selected bank variable
STA $05F4 ; preserve the status register
JSR $FCFA ; call LONG JUMP
```

SERVICE INTERRUPT is really a utility routine and covers the need to attend to an interrupt when you engaged in external banks 1 and 2. LNGIRQ is located at $FCFD (64765) and re-enables the BASIC/KERNAL bank or power-up configuration when an interrupt occurs in order to

service the interrupt. Program control is then passed back to wherever the code was interrupted. LNGIRQ is operated like this:-

1. Save the accumulator onto the stack.
2. Do the same to the X register, to preserve it.
3. Put the current bank combination into the accumulator.
4. Call the routine LNGIRQ.

I have included below a listing below for those who need it.

PHA ; push accumulator onto the stack
TXA ; transfer X register contents to the accumulator
PHA ; push that onto the stack
LDA £$XX ; save the bank number select of the present bank you are operating in
JMP $FCFD ; see to the interrupt

The above listings are meant purely for demonstrations of techniques, they are not designed for optimum use of memory and speed. There are two other banking routines in the KERNAL, one of which is of some interest, namely the PHOENIX which is located at $FCF4 (64756). This is for an autoboot of the internal ROM, in other words call this if you want to enable the 3+1 software of the PLUS/4.

It's now time to move theorectical side of interfacing to the PLUS/4. There is very little published information on the hardware of this machine (one of the main reasons why this series came about) and I have to admit that shortage of time and a heavy invlovlement with my AMIGA since November 1985 has precluded any direct experimentation on my part. There are two elements of interfacing the PLUS/4 that take my personal interest, the first being second processors and the second being networking.

At the home computer level second processors seem to be coming back into fashion. The BBC micro is the one taht springs to mind and users have a choice of either a 6502 or the Z80. Commodore did experiment with a second processor option on the C64, albeit not too successfully from a reliability standpoint, whereas the SuperPET with its 6809 option was successfully implemented. The C128 reinforces the popularity of second processors and carries aboard the ubiquitous Z80 for running CP/M. So what is the attraction of second processors and what are they?

A second processor gives the programmer two very useful features; the first being the ability to increase the RAM size without the complications of bank-switching, the second being the opportunity of using a different processor within the same machine and if need be a different operting system. Taking the first point of increasing the address space, an 8-bit processor can only 'see' 64k of RAM however, if you 'daisychain' processors together then each processor can share the same 64k of RAM or have their own 64k of RAM. The drawback to sharing RAM means that you are effectively bank switching in blocks of 64k, whereas separate RAM allows multi-tasking. For instance some processors are argueably better at maths routines than others, so designating maths routines to this processor whilst the native processor carries on at what it is best at can be done. Similarly, it is possible to have the second processor running at a higher clock speed so a 'turbocharger' concept is possible. The versatility offered by a second processor as a 'bolt-on goodie' is really only limited by your knowledge of microcomputer hardware particularly in view of the fact that 8-bit processors now cost less than £5.00. The second feature of different operating systems is well illustrated by CP/M on the C128.

Current knowledge of the PLUS/4 hardware suggests that if a second processor on a shared $FF00 to $FF1F and seemingly cannot be switched out of the address space irrespective of machine configuartion. The problem can be overcome in two ways, do not use shared RAM or write your program in such a manner that it avoids laying code into this address space. For instance, to install CP/M on the PLUS/4 using the C64 Z80 card would entail study of the expansion port diagram published in my previous article, building a male to female jumper connector to link the 44 pin card to the 50 pin port, then modifying the C64 CP/M BIOS and CCP programs. Anyone who gets as far as this must surely qualify for the 'Hacker-of-the-Year-Award' and should question really why they still messing around on home computers, I'm sure a job would be instantly available at one of the manufacturers! It is obviously beyond the scope of a magazine article to provide an in-depth discussion of second processors, however, I hope that I have stimulated some ideas within some readers.

Networking is a much hackneyed word within the computer industry and I make no apologies for providing my own interpretation of the word within the context of the PLUS/4. At a basic level and from personal experience of my own equipment my PLUS/4 and C64 share peripherals such as the 1541 drive. Occasional hang-ups do happen and provide I do not access the serial bus from both machines similtaneously, I have run the PLUS/4 version of SUPERBASE ,on one 1541 diasychained to another 1541, which in turn is running SUPERSCRIPT on my C64. The two machines seem quite happy to share the bus and although it is detachable which machine, the PLUS/4 or C64, is in actual control of bus, it would seem that on power-up the C64 acts as initial controller since it will run the 1541 immediatley, whereas the PLUS/4 prefers to go second and goes into a temporary sulk if asked first! I will refrain from describing any possiblities utilising this feature since I'm sure that you could well create your own.

The PLUS/4 supports RS232 more effectively than the C64 or VIC-20 and provides more features to the programmer. To fully implement RS232 you would have to provide a board with 1488/1489 line drivers to take the voltage up from 5.0 to 12.0, the true RS232 voltage level. This only becomes necessary if you were linking to another machine such as the BBC, the other Commodore home machines operate on the 5.0 volt TTL range. The reason why the PLUS/4 is much better than the earlier machines in terms of RS232 is because it does have a 6551 ACIA circuit. The C64 and VIC-20 emulates the 6551 ACIA by means of software within the KERNAL and the tradeoff for this being a maximum of 2400 baud transmit/receive rate whereas the PLUS/4 can run at a respectable maximum of 19,200 baud. In fact this was one of the main reasons why I purchased the PLUS/4.

I feel that the true latent strength of the PLUS/4 lies within the machine itself. The on-board ROM software is the key to this strength; no, I'm no t impressed with 3+1 and what I intend to do is to remove this"!?!!??" and dispatch it to the nearest dustbin. Then using thenow very reasonably priced EPROM blowers create a variety of ROM's containing for example, fig-FORTH or dare I say it COMAL (I hope that Brian Grainger, the ICPUG guru on matters COMAL is not reading this!) The whole principle is really identical to the sideways ROM idea as used on the BBC in the sense of user-installed ROM's. I hope that this has not proved too overwhelming to non-technical readers and made all those who don't own a PLUS/4 think very hard about buying one. Street prices now make this one of the cheapest entries into Commodore home computing and for existing owners there's a little ego-tripping on saying you now have TWO machines.

C16 and Plus/4: Your questions answered

CCI has been inundated by enquiries from C16 and Plus/4 owners since Christmas. This month we devote our Queries page to them.

Dear Editor,
I am one of those many thousands of people who, after purchasing a Commodore Plus/4 computer am having difficulty locating software, dealers, etc.

I would be grateful if you could give me any advice or information you may have regarding the purchase of such elusive material.

Peter Hope,
Stretford,
Manchester.

We are currently putting together a list of software and peripherals for the C16 and Plus/4 which we hope to publish in the next issue.

In the meantime, you may like to contact Venturegate who are now offering a special service to C16 and Plus/4 owners. A selection of 125 programs are available on a mail order basis. Venturegate are planning a software club offering discounts and software lists updated on a quarterly basis.

For more details contact:
Venturegate Ltd.,
17 Harold Road,
Leeds 6 IPR.
Tel: 0532 661 834

Dear Editor,
Please could you tell me whether there are any printer interfaces available for the Plus/4?

Ian Nichols,
S London.

FCC offer four interfaces compatible with the Plus/4 and C16, ranging in price from 47.50 to 64.99. For more information contact:
FCC Systems Ltd.,
The Lodge,
Moorlands Road,
Merriott,
Somerset TA16 5NF.
Tel: 0460 73442

Dear Editor,
Is there a Rampak for the C16 to increase memory, and will I then be able to run 64 software on the C16?

Colin Williamson,
St Helens,
Merseyside.

The answer to the first half of your question is yes. MCT have 64K Ramboard for the C16, costing 49.95. This is fitted internally and automatically provides access to 60671 bytes free to Basic. However, this DOES NOT mean that software written for the 64 can now be run on the C16.

MCT can be contacted on 0603 633005.

Dear Editor,
I write to you as the proud owner of a Plus/4. Proud because I think it is probably the best value for money available especially with the 1551 disk drive and MPS 803 printer.

I'm not entirely happy with the dearth of software and peripherals, but I believe a lot of this is due to negative attitudes in the trade and I hope that the good sales over Christmas may improve this.

I would like to ask if there is a modem suitable for Prestel for the Plus/4?

Peter Healy,
High Wycombe,
Bucks.

I'm sorry to say that we were unable to trace a modem compatible with the Plus/4. However I would like to take this opportunity to make a plea to all manufacturers to send us details of all C16 and Plus/4 products for inclusion in our lists.

Dear Editor,
Can you tell me why there is so little attention paid (by software houses – even Commodore itself) to the Plus/4 and the form of Basic it uses (Basic 3.5)?

Why has Commodore withdrawn, or never published, the 'Plus/4 Programmers Reference Guide'?

John Marsh,
Guildford,
Surrey.

Firstly, companies we have spoken to are now aware that there is a substantial demand for Plus/4 products and we can only hope that this will generate the production of further products.

With regards to the existence of a reference guide, Commodore never published the equivalent of the Programmers Reference Guide series for the C16 or Plus/4. What they did do was to put together a photo-copied guide of around 120 pages called the C16 and Plus/4 Programmers Guide.

The review of this guide published in CCI November 1985 reached the conclusion that it wasn't worth the £9 Commodore were asking for it.

If you are interested, it is available only from Commodore at:
Commodore (UK) Ltd.,
1 Hunters Lane,
Weldon,
Corby,
N Hants NN17 1QX
Tel: 0536 205555.

Do you have a computing problem, or advice to offer other readers? Write to us at:
Queries,
Commodore Computing International,
Finsbury Business Centre,
40 Bowling Green Lane,
London EC1R 0NE
Please do not send your SAE's as it is impossible to reply personally to every query.

C16/PLUS 4 CENTRE

HUGE SELECTION OF SOFTWARE
NEW TITLES ADDED EVERY DAY
DUST COVERS/
EXPANSION PACKS/BOOKS
IN FACT EVERYTHING TO DO
WITH C16/PLUS 4

SEND S.A.E. FOR OUR DESCRIPTIVE LIST
PAYMENTS BY VISA ACCESS P.O. CHEQUE
POST AND PACKAGING FREE U.K. MAINLAND/OVERSEAS £1

ANCO MARKETING
85 TILE KILN LANE
BEXLEY, KENT
Tel: (0322) 522631

POOLSWINNER

THE ULTIMATE POOLS PREDICTION PROGRAM

- **MASSIVE DATABASE** Poolswinner is a sophisticated Pools prediction aid. It comes complete with the largest database available – 22000 matches over 10 years. The database updates automatically as results come in.
- **PREDICTS** Not just SCOREDRAWS, but AWAYS, HOMES and NO SCORES.
- **SUCCESSFUL** SELEC guarantee that Poolswinner performs significantly better than chance.
- **ADAPTABLE** Probabilities are given on every fixture – choose as many selections as you need for your bet. The precise prediction formula can be set by the user – you can develop and test your own unique method.
- **SIMPLE DATA ENTRY** All team names are in the program. Simply type in the reference numbers from the screen. Or use FIXGEN to produce fixture list automatically (see below).
- **DISC/MICRODRIVE COMPATIBLE** Tapes supplied with conversion instructions.
- **PRINTER SUPPORT** Full hard copy printout of data if you have a printer.

AVAILABLE FOR Spectrum (48K), Commodore 64, VIC 20 (+16K), AMSTRAD, BBC B, Atari (48K), ZX81 (16K), Dragon, Apple II, ELECTRON

PRICE £15.00 (all inclusive)

Boxed, with detailed instruction booklet

NOW AVAILABLE

FIXGEN 85/6

AT LAST: No more struggling for hours to get the fixture list into the computer. FIXGEN has been programmed with all English and Scottish fixtures for 1985/6. Simply type in the date, and the full fixture list is generated in seconds. Fully compatible with Poolswinner.

POOLSWINNER with FIXGEN £16.50 (all inclusive)

COURSEWINNER V3

THE PUNTERS COMPUTER PROGRAM

NOT JUST A TIPSTER PROGRAM, Coursewinner V3 can be used by experts and occasional punters alike.

You can develop and test your own unique winning system by adjusting the analysis formula, or use the program in simple mode. Coursewinner V3 uses statistical analysis of major factors including past form, speed ratings, course statistics, prize money, weight, going, trainer and jockey form etc, etc. It outputs most likely winners, good long odds bets, forecasts, tricasts etc. The database includes vital course statistics for all British courses. You can update the database – never goes out of date.

AVAILABLE FOR Spectrum (48K), Commodore 64, BBC (B), AMSTRAD, Atari (48K), Apple II

PRICE £15.00 (all inclusive) includes Flat AND National Hunt versions.

Send Cheques/POs for return of post service to . . .

VISA phone 24 hrs

selec SOFTWARE

Access phone 24 hrs

37 COUNCILLOR LANE, CHEADLE, CHESHIRE. ☎ 061-428 7425

(Send for full list of our software)

SUPER GRAPHIX

PRINTER INTERFACES

FOR COMMODORE 64 AND VIC 20 MICROCOMPUTERS
UNLIKE ANY OTHER PRINTER INTERFACES ON THE MARKET THESE AMAZING PRODUCTS CONVERT STANDARD DOT MATRIX PRINTERS TO NEAR LETTER QUALITY!

CHECK THE OTHER FEATURES BELOW!

★ ★ STOP PRESS ★ ★ NOW AVAILABLE FOR CBM 128K

SUPER GRAPHIX jnr

☐ MICRO BUFFER
☐ GRAPHICS & NORMAL QUALITY PRINT
☐ NEAR LETTER QUALITY
☐ 8 OCTAVE SWITCHES WITH CHANGES CONSTANTLY MONITORED
☐ COMMAND CHANNEL
☐ 10 PRINTER MODES
☐ CENTRONICS COMPATIBLE
☐ SUPPORT MOST MAJOR PRINTERS
☐ 100% COMPATIBLE WITH SOFTWARE FOR VIC 1525 PRINTER
☐ USER MANUAL & SOFTWARE EXAMPLES

PRICE **£49.95** (inc. VAT) Post & Packing **FREE**

SUPER GRAPHIX

☐ 8 K BUFFER STANDARD
☐ 10 PRINTER MODES
☐ 3 INTERNAL SCREEN DUMPS
☐ EXTENSIVE COMMAND CHANNEL
☐ RESET BUTTON TO HALT PRINTING FROM BUFFER
☐ NEAR LETTER QUALITY MODE BUILT IN
☐ CAPABLE OF STORING 2 ADDITIONAL FONTS
☐ CORRECT GRAPHICS / TEST ASPECT RATIO FOR ALL MAJOR PRINTERS
☐ 8 OCTAVE SWITCHES WITH CHANGES CONSTANTLY MONITORED
☐ INTERNAL FONTS SUPPORT, SUPER SCRIPT, SUB SCRIPT, UNDERLINING, BOLD FACE AND CHOICE OF 9 PITCHES

PRICE **£69.95** (inc. VAT) Post & Packing **FREE**

Available Only Through Exclusive Importers & Distributors

Screens Microcomputer Distribution

Main Avenue, Moor Park, Northwood, Middlesex. Tel: 09274 20664. Telex: 923574 ALACOL G

MASTERTRONIC
BMX RACERS
TUTTI FRUTTI
ICES
DEATH RACE 16
COMMODORE 16
BLAGGER
Commodore 16
ROCKMAN
Space Escort
COMMODORE 16
ATLANTIS
FORMULA 1 SIMULATOR
199 RANGE
SPECTIPEDE
More Adventures of BIG-MAC Mad Maintenance Man
C16/Plus 4
DORK'S DILEMMA?
Commodore 16 Plus 4
Gremlin Graphics

C16 — Pick of the Bunch

Believe it or not, there are over one hundred games titles for the C16. (Don't forget you can also run C16 software on the Plus/4, but not vice versa.) Conversions have been made of popular games and many C16 owners will welcome the news that US Gold have converted its mega-hit Beach Head. There are also original games written for the C16. Something for everyone, from maze games to simulators.

We start this selection of games in a maze, trying to avoid the dreaded Zobwats! They are the guardians of the maze in which the dismantled parts of your crashed transporter craft have been hidden by the inhabintants of a strange planet. The game is *Dork's Dilemma, by Gremlin Graphics.* You are Dork and you must collect and reassemble the parts of your craft.

We continue with mazes for the next three titles. *Mastertronic's Rockman* places you in a diamond mine attempting to collect enough sparklers to enable you to return to England rich and famous. Greed is a funny thing, and strangely enough there are lots of baddies about trying to steal the diamonds you have worked so hard to find.

We remain underground with *Cave Fighter from Bubble Bus.* Trapped in an underground cave system, your energy is running out. There are many aliens to zap as you try to escape by travelling through all the caves before your energy finally runs out.

> **"What games are there for the C16?", is a cry we have heard many times over the last month. Well, we've put together a selection of C16 games to tempt you.**

***Blagger, from Alligata,* is a conversion of a popular 64 title. As master burglar, Roger the Dodger, you rob safe after safe always on the look out for ghoulish nightwatchmen.**

If you want some good old 'shoot at anything that moves' fun, look at *Space Escort from Atlantis.* Your planet is doomed, and you are escorting space liners carrying your people to the newly conquered world of Sistoria. Just when you thought it was safe to go back into space, wave after wave of alien attackers set out to blast you out of the universe.

***Spectipede, from Mastertronic,* is for those who are selective about just who they blast to pieces, but not for those who are frightened of creepy crawlies. You must destroy the Spectipede one segment at a time, while looking out for spiders and the enemy ship.**

Feeling fruity? Try playing *Matertronic's Tutti Frutti.* As super strawberry, King of the Orchard, (eh!) you must collect all the ripe cherries. Beware the bad apples and the acid apple gang.

***Mastertronic's Big Mac, The Maintenance Man,* is not about hamburgers! Mac is a scret agent with a mission – to boldly go where no Big Mac has gone before and achieve a complete shut down of the enemy power station.**

We will round up this selection with three simulations. *Death Race 16, from Atlantis,* gives you 80 seconds in which to overtake the 70 cars that left you stalled on the starting grid. Instant death results from the slightest mistake.

***Formula 1 Simulator, from Mastertronic,* is very realistically based on Formula One levels of acceleration, braking and road holding.**

Finally, you have been entered for the Mastertronic Gold Cup in *BMX Racers.* There are five courses to undertake and in addition to avoiding hazardous obstacles, you must pick up all marker flags on the way. If you don't, you crash at the finish!

turn to page 80

BASIC for begginners

PART II

Bill Donald leads you further along the path of programming in the second installment of our guide to basic programming.

I hope that by now you are starting to become quite familiar with your C16, C64, Plus/4 or C128 and after reading the last installment of the series you are all rareing to go. Before we do, I asked that you became familiar with the SAVING and LOADING of programs. You have probably learned just what the word frustration means that when having spent large amounts of time entering in program listings from books or magazines you forget to SAVE the program, or alternatively RUN it just to see the results with a resultant machine 'crash'.Even worse still, accidentally NEWing it. Yes, you don't have to tell me about that sinking feeling in the pit of the stomach! Moral: don't be afraid of storing the program on tape or disk. I feel a lot of the reluctance to do this stems from a fear of running out of storage space, think of it like this, YOUR TIME is very much more expensive than a £2.00 disk or £0.50 cassette tape.

Computer jargon

One of the biggest problems in computers is coming to terms with the jargon used. It is difficult enough learning how to use the things, let alone looking at and trying to understand what MID$ or ASC means in real life.. At this point I going to have to make an apology for throwing yet another new word at you, a word which is rarely seen or used when discussing computer programming at a beginners level and yet is of such fundamental importance the failure to understand and apply the concepts embodied in this word really make it impossible for you to grasp what computer programming is all about. This word is ALGORITHM. No, it isn't some obscure japanese medieval dance or a method of birth control practised in 19th century Siberia but a description of a process.

For instance, suppose you wanted to brew some beer at home. Assuming of course that you have the ingredients to hand, the instructions or sequence of events or process of manufacture to do this can be detailed as follows:-

1. Boil malt for 2 hours.
2. Simmer hops with resulting liquor for 30 minutes.
3. Dilute with cold water.
4. Add yeast to liquor.
5. Allow to stand and ferment for 14 dsays.
6. Transfer liquor to storage containers.
7. Invite Bill Donald around and consume beer.

If any of the above steps are rearranged then the end-result will not be achieved, not least because I'll be pretty unhappy at being involved with washing-up but there is no way that drinkable beer will be produced. So as you can see for some processes a very clearly defined sequence of steps is necessary. This is an algorithm for producing beer.

Your Commodore computer can only understand very clear, unambiguous instructions and in order for us to produce these instructions in a notation that the machine understands, a computer program or sequence of statements is defined using an algorithm. The programming language selected to communicate can be any one of those languages discussed in the last part of this series, but in this case it will be in BASIC. You can think of an algorithm in whatever terms suits you best, for instance a recipe, an instruction sheet, a flow diagram. But remember that this is only the 'bones' of your computer program, to put 'flesh' on these bones and turn it into a living thing requires a computer language.

So, having drawn up your algorithm you then start to convert it into Commodore BASIC. To make things simpler, especially when a large number of steps are involved which demand an answer to a yes/no or positive/negative it is usual to draw a program flow chart. The stencils for these can be obtained from branches of Menzies or W.H.Smith very cheaply and I would urge everyone reading this series to buy one AND START USING THEM. The symbols on them are standardised and despite my own initial scepticism these stencils are very, very useful tools to learning. There is an old adage in computers which goes something like this, 99% of would-be programmers think they can sit down and start entering from the keyboard a workable program from scratch whilst the other 1% sit down and plan the program, in reality these figures are reversed.

The art of programming

Learning to program computers means, in most peoples minds, wrestling with the intricacies of, for example BASIC. I hope the above has convinced you otherwise and the REAL art of programming is the defining and draughting of the correct algorithm. OK, lets try putting this into action.

Suppose that I want to display a numeric value on the screen and then add to this value a preset amount, again displaying this on the screen. I also want the computer to stop exactly when this value has been added to or incremented by another preset number of times. It sounds really complicated, but it isn't. Construct the algorithm like this:-

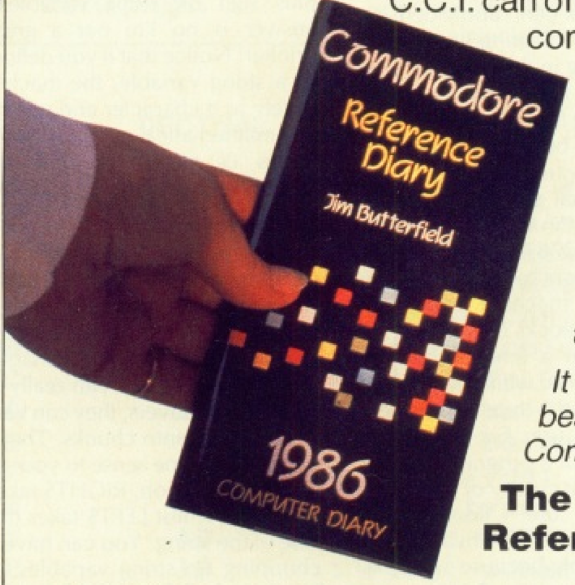
1. Clear the screen
2. Select the initial numeric value
3. Type this value into the computer
4. Display this value
5. Add to this value the present amount
6. Count how many times we have done this
7. Is it more than specified number of times? YES then stop No then keep counting

Now convert this into BASIC:-

```
10 PRINT CHR$(147)
20 X = 1
30 PRINT X
```

Get the best

... the Commodore Diary



C.C.I. can offer you the **Commodore Reference Diary,** compiled by Jim Butterfield for Pitman Publishing – the greatest expert on Commodore computing – at an exclusive 20% discount on the recommended retail price. The Diary contains a wealth of information and tips on all aspects of Commodore machines, plus everything you need in a pocket size diary.

It will help you get the best from your Commodore computer.

The Commodore Reference Diary

RECOMMENDED PRICE £3.95

C.C.I. READERS PRICE

£3.15

+ 20p p&p

... in CCI Sweatshirts and Tee Shirts

Tell the world you've got the best!

Terrific Quality and Terrific Value!
Get them for yourself and for giving as presents.
They're great to look at and wonderful to touch!

Sweatshirts – £9.45 inc P&P
(grey or white)

Tee Shirts – £4.45 inc P&P
(grey or white)

COMMODORE
Computing International Magazine
Get the best

TO: Commodore Computing International
Finsbury Business Centre
40 Bowling Green Lane, London EC1R ONE

Please send me ☐ **Diaries** @ **£3.35** inc p&p
Please send me ☐ **Sweatshirts** @ **£9.45**
in Grey ☐ White ☐ size S ☐ M ☐ L ☐ XL ☐
Please send me ☐ **Tee Shirts** @ **£4.45**
in Grey ☐ White ☐ size S ☐ M ☐ L ☐ XL ☐
Name
Address

Tel
Please make cheques or postal order payable to CROFTWARD LTD or state your Access number below
☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

```
40 X = X + 1
50 FOR C = 1 TO 20
60 NEXT C
70 GOTO 20
```

When you start to compare lines of the algorithm with the program, it should start to make sense.

```
10 PRINT CHR$(147) : 1. Clear the screen
20 X = 1 : 2. Select the initial numeric value : 3. Type this value into the computer
30 PRINT X : 4. Display this value
40 X = X + 1 : 5. Add to this value the preset amount
50 FOR C = 1 TO 22 : 6. Count how many times we have done this
60 NEXT C : 7. Is it more than the specified number of times? YES then stop
70 GOTO 20 : 7. Is it more than the speicfied number of times? NO then keep counting.
```

You'll notice that line 20 has two parts to it, I have instructed the machine to use 'X' as the initial value. The reason for this is to stop the machine getting confused with the various numbers that are floating around within the program. These numbers are termed VARIABLES and by attaching letters to these numbers the machine is able to keep track of them, so in this case I have selected the letter X to serve as the initial numeric value VARIABLE. We'll be learning a great deal more about variables, as there are different types and how very important they are to programming. It is essential that you understand what a variable is, so if you are unsure then re-read the above again.

You should, by now see what the function of an algorithm is and how much easier it is to develope a structure to your program, in other words design the program to do exactly what it is required to do. If you develope this approach then the debugging, or unravelling of mistakes becomes much simpler.

What are variables?

Lets go back to this business of VARIABLES and what they are. You will have appreciated from the above program that at any given point within the program the machine has quantities of numbers churning around inside of it. By defining a letter to an initial value of a number I have made what is called in BASIC a NUMERIC variable. Commodore BASIC can support more than the 26 letters of the alphabet for NUMERIC VARIABLES and you can define these to a depth of 2. This means I could have used 'AB' or 'CD' or 'EF' or even 'A1', 'X4' or 'K9' instead of plain 'X' in the program. There are restrictions on certain combinations of letters depending on which machine you have. For instance, the variable 'TI' is used by the computer to keep track of a numeric variable that has to be included in all programs, even if you do not define it yourself, this variable is time. Similarly the variable 'ST' which is short for STATUS is another variable, and this combination of letters should not be taken as a user numeric variable unless you are aware of the effect.

Numeric variables can subdivided into two, integer and floating-point. The variables I was using in the program were floating-point which meant that they could have a value ranging from 0 to 10 followed by 38 noughts and be either negative or positive. Integer variables are whole numbers, no decimal points and have a smaller range, which in Commodore 8-bit mahines run from -32767 to 32768, which is 65535, the number of bytes that make up the memory of the machine (except the C128 which has 2 blocks of 64K but can only use 1 block at a time). Obviously depending on what you want the program to do depends on the type of numeric variable you would use. For instance, a program or section of a program that was very dependant on accuracy of the figures involved would use floating-point variables. If that is the case, why have two different types? Simply because what you make up for in accuracy in floating point variables, you pay for by using up more memory than employing integer variables. Your machine can recognise which type you have selcted by appending the percent '%' to the end of the variable. So in our program changing the 'X' to 'X%' would be worthwhile since we are only going from 1 to 22. To see just how much the difference is on your memory using these variables try changing the size of the counter from 22 to 2000 and the variables from floating-point to integer and then, in direct mode i.e. enter straight from the keyboard the command 'PRINT FRE(0)'.

The third type of variable used in BASIC is termed a string variable and this can be recognised from an integer variable because it uses the dollar '$' suffice. A string variable uses any characters that can entered from the keyboard for display, e.g. letters or graphic symbols as well as numbers. Try the following program which is self-explanatory:-

```
10 A$ = “VAT”
20 B$ = “69”
30 C$ = “IS”
40 D$ = “A”
50 E$ = “GOOD”
60 F$ = “WHISKEY”
70 G$ = “TAX”
80 H$ = “ON”
90 PRINT A$ + B$ + C$ + D$ + E$ + F$
100 PRINT A$: B$: C$: D$: E$: F$
110 PRINT A$; B$; C$; D$; E$; F$
120 PRINT C$; A$; D$; E$; G$; H$; A$; B$; F$; “?”
```

You should see the effect of using the plus sign on string variables, and the answer is no I'm not a great whiskey drinker! Notice that if you define a number as a string variable, the machine treats it purely as a character and will not perform any mathematical manipulations on it. This brings us nicely to some other string functions RIGHT$, LEFT$ and MID$.

String cleavers

Most people think that a computer is only any good with figures, but as you will see it is just as versatile with letters, or strings of letters which have been bound up in packages of string variables. MID$, RIGHT$ and LEFT$ can really be thought of as string cleavers, they can very precisely cut the string into chunks. They should by now make some sense to you; MID$ takes the centre portion, RIGHT$ takes the right-hand end whilst LEFT$ takes the left-hand side of the string. You can have a lot of fun chopping up string variables using these functions and then rejoining them in freshly named strings to create all sorts of messages within your programs. The exact method of using these functions is well covered in your USER MANUAL and I would suggest that you use the above program to experiment on.

You will notice that I have concentrated on explanations of BASIC rather than providing listings of programs which may look pretty but don't really tell you much about how they work or teach you anything other than marginally improving your keyboard technique. I have also set out to take on fairly early in this series the most difficult parts of BASIC, or so they seemed to me when I was learning it. So the next part will deal with ARRAYS which always struck terror into me when I was confronted with them, I hope that afterwards this will not be the case with you.

When writing a tutorial series such as this it is difficult to assess if you are actually gaining from it. If you do have any questions on the contents then letters to our delectable Editor would be most welcome. Please restrict them to have points raised within this series only and if there is something that you wish me to go over again, then we may have a "Questions Arising" article in the near future.

128 Memory Map: Zero Page

Searching for a memory location you know exists but can't find can be very frustrating. Over the next issues we will be publishing the 128's memory maps. We start this month with zero page.

This is a preliminary zero page memory map for the Commodore 128 when in 128 mode. Much of the memory map is similar to the C-64's although most of it has moved location a byte or two. For instance the start of BASIC pointer has moved up from 44-45 (2B-2C) to 46-47 and yet the real-time jiffy clock and the start of tape buffer pointer locations remain the same.

Without a map I found it very difficult to make the most of my 128 and I know how very frustrating it can be searching for a memory location you know exists but can't find. I am currently up to my neck in reams of memory maps and kernal routines etc. These I hope to get into shape and then into your homes as soon as possible.

```
HEX          DECIMAL

0000            0      : 6510 Data direction register.
0001            1      : 6510 Data register
0002-0004       2-4    : SYS Address argument
0005-0009       5-9    : SYS register save area S, A, X, Y, SP
000A           10      : Flag: Scan for quote at end of string
000B           11      : Screen column from last TAB
000C           12      : Flag: 0=LOAD, 1=VERIFY
000D           13      : Input buffer pointer / No of subscripts
000E           14      : Flag: Default array dimension
000F           15      : Data type: $FF=string, $00=numeric
0010           16      : Data type: $00=floating point, $80=integer
0011           17      : Flag: DATA scan / LIST quote / Garbage collect
0012           18      : Flag: subscript ref. / user func. call
0013           19      : Flag: $00=INPUT, $40= GET, $98=READ
0014           20      : Flag: TAN sign / comparison result
0015           21      : ?
0016-0017      22-23   : Temp integer value
0018           24      : Pointer: temp string stack
0019-001A      25-26   : Last temp string address
001B-0023      27-35   : Stack for temp strings
0024-0027      36-39   : Utility pointer area
0028-002C      40-44   : Floating point product of multiply
002D-002E      45-46   : Pointer: start of BASIC
002F-0030      47-48   : Pointer: start of BASIC variables
0031-0032      49-50   : Pointer: start of BASIC arrays
0033-0034      51-52   : Pointer: end of BASIC arrays + 1
0035-0036      53-54   : Pointer: bottom of string storage
0037-0038      55-56   : Utility string pointer
0039-003A      57-58   : Top of string/variable bank (bank 1)
003B-003C      59-60   : Current BASIC line number
003D-003E      61-62   : Pointer to basic text used by chrget, etc:
003F-0040      63-64   : Used by print using
0041-0042      65-66   : Current DATA line number
0043-0044      67-68   : Current DATA item address
0045-0046      69-70   : Vector: INPUT routine
0047-0048      71-72   : Current BASIC variable name
0049-004A      73-74   : Pointer: current BASIC variable data
004B-004C      75-76   : Pointer: index variable for FOR/NEXT
004D-0054      77-84   : ?
```

0055-0056	85-86	: Flags 'help' or 'list'
0057-0062	87-98	: ?
0063	99	: Paint-left flag
0063	99	: FAC#1 exponent
0064	100	: Paint-right flag
0064-0067	100-103	: FAC#1 mantissa
0068	104	: FAC#1 sign
0069	105	: Pointer: series-eval. constant
006A	106	: FAC#2 exponent
006B-006E	107-110	: FAC#2 mantissa
006F	111	: FAC#2 sign
0070	112	: Sign comparison result: FAC#1 vs #2
0071	113	: FAC#1 low-order (rounding)
0072-0073	114-115	: Pointer: cassette buffer
0074-0075	116-117	: inc. val for auto (0=off)
0076	118	: Flag if 10k hires is allocated
0077-0078	119-120	: Print using's leading zero counter
0079	121	: Used as temp for indirect loads
007A-007C	122-124	: Descriptor for ds$
007D-007E	125-126	: Top of run time stack
007F	127	: Flags run/direct mode
0080-0081	128-129	: Dos parser status word
0082	130	: BASIC zero page storage for graphic commands
0083	131	: Current colour selected
0084	132	: Multicolour 1
0085	133	: Multicolour 2
0086	134	: Foreground
0087-0088	135-136	: X scale
0089-008A	137-138	: Y scale
008B	139	: Stop paint if not background/not same colour
008C-008F	140-143	: Graphics workspace?
0090	144	: Status Byte (I/O)
0091	145	: Stop key flag
0092	146	: Tape temporary
0093	147	: Load or verify flag
0094	148	: Serial buffered character flag
0095	149	: Character buffer for serial
0096	150	: Cassette sync No
0097	151	: Temp for 'BASIN'
0098	152	: How many files are open
0099	153	: Default input device No. Normally 0
009A	154	: Default output device No. Normally 3
009B	155	: Cassette parity
009C	156	: Cassette dipole switch
009D	157	: Operating system message flag
009E-009F	158-159	: Cassette error passes 1&2
00A0-00A2	160-162	: 24 hour clock (jiffy) in 1/60th seconds
00A3-00AB	163-171	: Serial & cassette technical stuff
00AC-00AD	172-173	: Pointer: tape buffer/screen scrolling
00AE-00AF	174-175	: Tape end addresses/end of program
00B0-00B1	176-177	: Tape timing constants
00B2-00B3	178-179	: Address of tape buffer
00B4	180	: RS-232 Out bit count
00B5	181	: RS-232 Next bit to send
00B6	182	: RS-232 Out byte buffer
00B7	183	: Length of current file name
00B8	184	: Current logical file number

```
00B9       185      : Current secondary address
00BA       186      : Current device number
00BB-00BC  187-188  : Pointer: current file name
00BD       189      : RS-232 Out parity
00BE       190      : Cassette read block count
00BF       191      : Serial word buffer
00C0       192      : Cassette control switch
00C1-00C2  193-194  : I/O start address
00C3-00C4  195-196  : Cassette load temps
00C5       197      : Tape read/write data
00C6       198      : Bank for current load/save/verify operation
00C7       199      : Bank where current filename is found
00C8-00C9  200-201  : RS-232 input buffer pointer
00CA-00CB  202-203  : RS-232 output buffer pointer
00CC-00CD  204-205  : Keyscan table pointer
00CE-00CF  206-207  : Utility string pointer
00D0       208      : Number of characters in keyboard buffer
00D1       209      : Pending function key flag
00D2       210      : Index into pending function key string
00D3       211      : Keyscan shift key status
00D4       212      : Keyscan current key index
00D5       213      : Keyscan last key index
00D6       214      : Carriage return input flag
00D7       215      : 40/80 column mode flag. 0=40
00D8       216      : Text/graphics mode flag
00D9       217      : Ram/rom VIC chr fetch flag (bit 2)
00DA-00DF  218-223  : Programmable key variables
00E0-00E1  224-225  : Pointer to current text line (cursor)
00E2-00E3  226-227  : Pointer to current line colour
00E4       228      : Window lower limit
00E5       229      : Window upper limit
00E6       230      : Window left margin
00E7       231      : Window right margin
00E8       232      : Current input column start
00E9       233      : Current input line start
00EA       234      : Current input line end
00EB       235      : Current cursor physical line number
00EC       236      : Cursor column on current line
00ED       237      : Max number of screen lines
00EE       238      : Max number of screen columns
00EF       239      : Current character to print
00F0       240      : Previous character printed (for<esc>test)
00F1       241      : Current character colour
00F2       242      : Saved colour to print (insert/delete)
00F3       243      : Reverse mode flag
00F4       244      : Quote mode flag
00F5       245      : Insert mode flag
00F6       246      : Auto-insert mode flag
00F7       247      : Disables SHIFT, CTRL and Commodore keys
00F8       248      : Disables screen scrolling. 0=disabled
00F9       249      : Disables bell (beep)
00FA-00FE  250-254  : Free zero page
00FF       255      : ?
```

Courtesy of Commodore.

POKEing Around — not just a Memory

Memory Scan

Ian Bennet imparts more interesting snippets to make your programming life more fun

Memory scan is a small machine code program which will enable you to examine any section of memory as Ascii, without those annoying control and cursor codes changing your display into something Picasso would have been proud of. The display is made up as follows: First five columns for the memory location, a space, 33 columns of Ascii and then a final space.

The memory location refers to the first ascii character in each line.

The program uses the Basic line number kernal routine to print the memory location. The value in each location is then tested to see if it is a printable Ascii value by using the CMP instruction. When a CMP is used (ie CMP £$20) the carry flag is set if the value compared to the accumulator is less or equal. The flag is reset (0) if it is greater. By using a series of comparison values the non printable characters can be isolated and a full stop substituted. The remaining codes are printed. The stop and space bar keys are then scanned to see if you wish to either pause or exit the program.

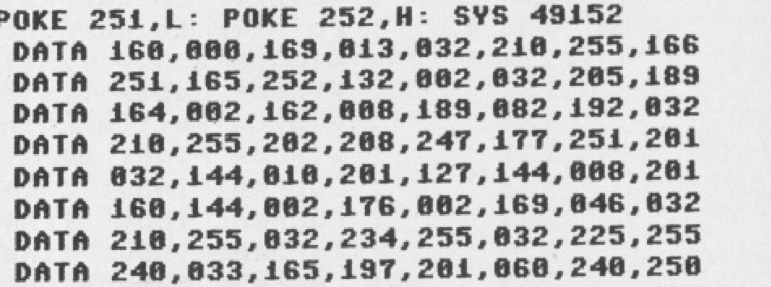
Type in the program and save. On running the program "DATA ERROR" will be displayed should any of your data be incorrect. Once you have Memory Scan up and running you will be presented with the message "MEMORY ADDRESS?". To this you should respond with the memory location from where you would like to start your scan. The program will now procede to display the contents on the memory in question. To pause the display press the space bar and hold for as long as you should require. The display may be slowed down holding down the control key. To exit Memory Scan press the RUN/STOP key.

The Machine code portion of the program could be saved seperately and accessed with SYUS 49152. The memory address would then need to be poked into locations 251 and 252 as low byte/high byte. The "peek (253)" is used to stop the Basic loader from reading the data on the second and subsequent runs, thus preventing an annoying pause each time the program is run.

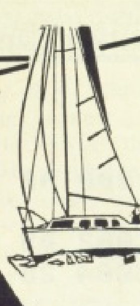
```
10 PRINT CHR$(147)CHR$(5): IF PEEK(253)=28
THEN 40
20 FOR X=49152 TO 49243: READ A: POKE X,A:
C=C+A
30 NEXT: IF C <> 12608 THEN PRINT"DATA
ERROR": END
40 PRINT CHR$(147): INPUT" MEMORY ADDRESS";A
50 POKE 253,28: H=INT(A/256): L=A-(H*256)
60 POKE 251,L: POKE 252,H: SYS 49152
100 DATA 160,000,169,013,032,210,255,166
110 DATA 251,165,252,132,002,032,205,189
120 DATA 164,002,162,008,189,082,192,032
130 DATA 210,255,202,208,247,177,251,201
140 DATA 032,144,010,201,127,144,008,201
150 DATA 160,144,002,176,002,169,046,032
160 DATA 210,255,032,234,255,032,225,255
170 DATA 240,033,165,197,201,060,240,250
180 DATA 200,192,033,208,216,024,169,033
190 DATA 101,251,133,251,144,178,230,252
200 DATA 076,000,192,029,029,029,029,029
210 DATA 029,145,013,096,201,193,240,003

READY.
```

EXAMPLE SCREEN DUMP

```
MEMORY ADDRESS? 40960
```



£10,000 HOLIDAY BONANZA



WELCOME TO THE WORLD OF COMMODORE

Maintenance, Service, Support, Training,
all from your No 1 Commodore centre

COMMODORE 64

computer compendium

Commodore 64 computer
cassette unit
music maker keyboard and software
+ FREE the growing pains of Adrian Mole

£199.99

PRINTERS

DAISY WHEELS	
DPS 1101	199.99
Juki 6100	399.95
Daisystep 2000	287.50
DOT MATRIX	
LX 80 INC T/FEED	293.00
MP 165	299.00
FX80	399.95

FREE SEIKO RC-100

WORTH £99.99

If you buy either of the following
MPS803 dot matrix printer
1541 disk drive
1701 colour monitor

£199.99 EACH

+ FREE Seiko RC-1000 wrist terminal/watch **worth £99.99**

Special Package Deal

C64 computer
1541 disk drive
Super Zaxxon game
Exodus – Ultima III game

£299.99

MONITORS

1701 COL	199.99
1901 GREEN	99.99
1902 COL	299.99
CUB 1431AP	258.95
PHILLIPS GREEN	79.99
PHILLIPS CABLE	10.00

Yes Its true!!!

For a limited period we are giving away a £5.00 Travel Chek for spending money on your next holiday with **EVERY £50 SPENT.**
Thats not all folks!!!
your vouchers could also win you a **FREE** stay **HOLIDAY** for two or four people in our lucky numbers draw.

ONE ENTRY FOR EVERY £5 VOUCHER

Peripheral Pack

1541 disk drive
and dot matrix printer

199.99

64 & 128

Software

Superscript	85.00
Superbase	85.00
Flight Sim II	48.00
& MORE	

1570

single sided disk drive
170K (formated) storage capacity

£199.99

C128 and 1570 Package

C128 computer
1570 disk drive
5 × diskettes

£446.00

C128

The 3 in 1 computer
100% compatible with C64 software
128K RAM, 72K ROM, 6510 & Z80A CPU's

£269.00

Music to COMMODORE users ears

The exciting range of software for the 64 & 128

Music Maker 128	29.99
Play-a-long Albums (pop, Beatles or Classic)	9.99
Commodre sound studio	14.95
Sound Sampler	69.99
Sound Expander	99.99

CHROMASONIC

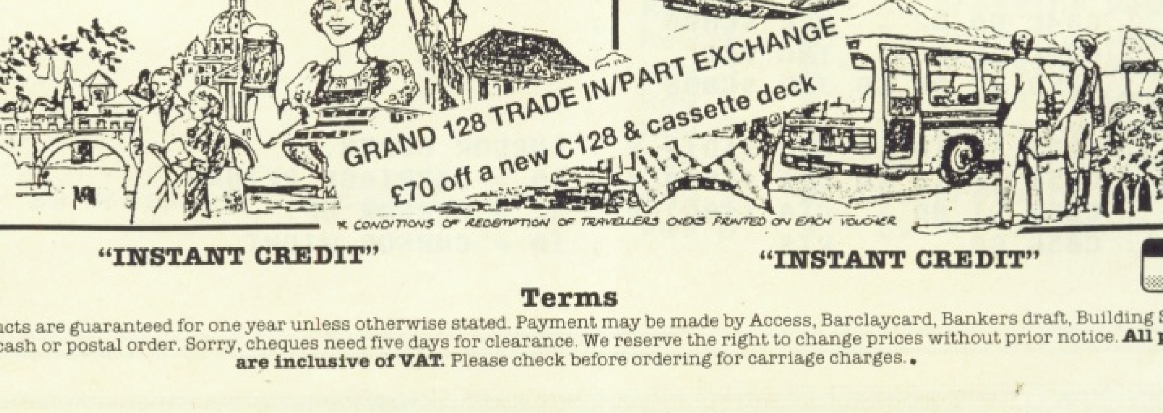
Computer Centres

48 Junction Road, Archway, London N19 5RD
01-263 9493/5
238 Muswell Hill Broadway, London N10 3SH
01-883 3705

Epsom Printer Pack

LX80 NL Q printer
tractor feed unit
comprint interface & cable
(allows full Commodore graphics)
box of 2000 sheets 11 × 9.5 paper

£359.99



GRAND 128 TRADE IN/PART EXCHANGE
£70 off a new C128 & cassette deck

* CONDITIONS OF REDEMPTION OF TRAVELLERS CHEKS PRINTED ON EACH VOUCHER

"INSTANT CREDIT" "INSTANT CREDIT"

Terms

All products are guaranteed for one year unless otherwise stated. Payment may be made by Access, Barclaycard, Bankers draft, Building Society cheque, cash or postal order. Sorry, cheques need five days for clearance. We reserve the right to change prices without prior notice. **All prices are inclusive of VAT.** Please check before ordering for carriage charges.

```
: C000 A0 00     LDY #$00     ; SET CHARACTER COUNTER TO 0.
:
: C002 A9 0D     LDA #$0D     ; PRINT A CARRIAGE RETURN.
: C004 20 D2 FF  JSR $FFD2    ;
:
: C007 A6 FB     LDX $FB      ; GET LINE NUMBER.
: C009 A5 FC     LDA $FC      ;
:
: C00B 84 02     STY $02      ; USE LINE NUMBER KERNAL ROUTINE.
: C00D 20 CD BD  JSR $BDCD    ; 'Y' IS STORED IN 02 AS BDCD
: C010 A4 02     LDY $02      ; CHANGES ALL OF THE REGISTERS.
:
: C012 A2 08     LDX #$08     ; AFTER PRINTING THE LINE
: C014 BD 52 C0  LDA $C052,X  ; NUMBER GET BACK INTO
: C017 20 D2 FF  JSR $FFD2    ; POSITION BY PRINTING
: C01A CA        DEX          ; THE EIGHT CURSOR CODES
: C01B D0 F7     BNE $C014    ; STORED AT $C053 ONWARDS.
:
: C01D B1 FB     LDA ($FB),Y  ; GET MEM CONTENTS.
:
: C01F C9 20     CMP #$20     ; IS THE CHARACTER <32.
: C021 90 0A     BCC $C02D    ; YES, THEN PRINT A FULL STOP.
: C023 C9 7F     CMP #$7F     ; IS THE CHARACTER <127.
: C025 90 08     BCC $C02F    ; YES, THEN PRINT THE CHARACTER.
: C027 C9 A0     CMP #$A0     ; IS THE CHARACTER <160.
: C029 90 02     BCC $C02D    ; YES THEN PRINT A FULL STOP.
: C02B B0 02     BCS $C02F    ; NO THEN PRINT THE CHARACTER.
:
: C02D A9 2E     LDA #$2E     ; MAKE CHARACTER A FULL STOP.
: C02F 20 D2 FF  JSR $FFD2    ; PRINT CHARACTER.
:
: C032 20 EA FF  JSR $FFEA    ; TEST FOR STOP KEY.
: C035 20 E1 FF  JSR $FFE1    ;
: C038 F0 21     BEQ $C05B    ; IF PRESSED THEN END.
:
: C03A A5 C5     LDA $C5      ; TEST FOR SPACE BAR.
: C03C C9 3C     CMP #$3C     ;
: C03E F0 FA     BEQ $C03A    ; IF PRESSED TEST AGAIN.
:
: C040 C8        INY          ; HAVE WE PRINTED
: C041 C0 21     CPY #$21     ; ENOUGH CHARACTERS.
: C043 D0 D8     BNE $C01D    ; NO, THEN PRINT MORE.
:
: C045 18        CLC          ; INCREASE LINE NUMBER AND
: C046 A9 21     LDA #$21     ; MEMORY LOCATION VALUE.
: C048 65 FB     ADC $FB      ;
: C04A 85 FB     STA $FB      ;
: C04C 90 B2     BCC $C000    ;
: C04E E6 FC     INC $FC      ;
: C050 4C 00 C0  JMP $C000    ;
:
: C053 1D 1D 1D  ORA $1D1D,X  ; CURSOR CODES.
: C056 1D 1D 1D  ORA $1D1D,X  ; 0D = CARRIAGE RETURN.
: C059 91 0D     STA ($0D),Y  ; 91 = CURSOR UP.
: C05B 60        RTS          ; 1D = CURSOR RIGHT.
```

POKE 22

This program is about as useful as an umbrella would be to a deep sea diver but will serve to demonstrate a couple of ideas suitable for inclusion in your own programs! Type in and run the listing. You will see "PRESS ANY KEY" within a box of stars on your screen. Pressing a key will then list the program. If you examine the listing you will notice that lines 10 – 12 are the same as the display. Notice that the lines do not have any other commands on them (eg print etc). How therefore does the text get onto the screen?

Reading through the programme will hopefully explain.

Line:

0: Sends the programme to line 4.

4: Clears the screen and then prints a chr$(31) which causes all further text to be printed in blue (the same as the background). "GOTO1" is printed next with a chr$(5) changing the text back to white.

5: Pokes the chr$ codes for HOME and CARRIAGE RETURN into the keyboard buffer which lives at locations 631 – 640. Location 198 is poked with a 2. This is to tell the computer how many characters are in the buffer. Note the buffer will be read when the program ends.

6: Poke 22,35 is not the sort of poke you will find in your ever helpful Commodore User manual. This is a curious poke which succeeds in 'turning off' the line numbers when a program is listed.

This it does when the "LIST10-" is carried out. You can see from this how the "PRESS ANY KEY" (Lines 10-12) is displayed. After a list has been performed the program comes to an end regardless of how to where it has been performed. The keyboard buffer now comes into play. The Home code is executed first which places the cursor in the top left hand corner (where we earlier printed "GOTO1") followed by the CARRIAGE RETURN. What this does in effect is to enter GOTO1 in direct mode. This gets the program going again and takes us onto line 1.

1: This poke restores the line numbers.

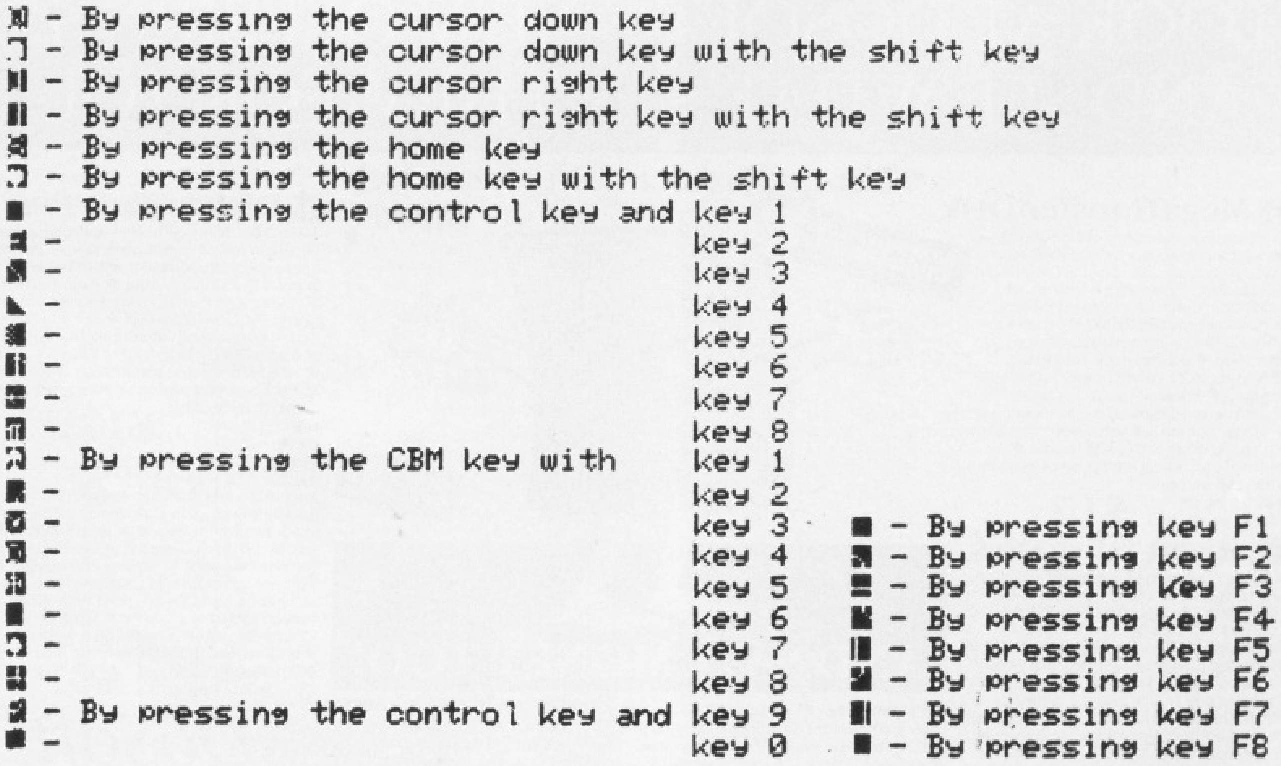
2: Tests to see if any key is pressed. Once a key is pressed the program will continue with the next line.

3: The last line (Funny, I thought it was the third!) clears the screen, lists the program and then ends.

Such a tiny program yet so many words!! I hope this will give some idea of your more adventurous experiments some new ideas to get to grips with.

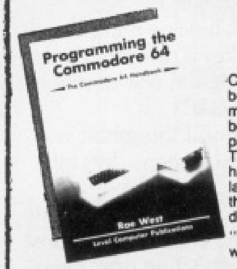
```
0 GOTO4
1 POKE22,25
2 GETA$:IFA$=""THEN2
3 PRINTCHR$(147):LIST
4 PRINTCHR$(147)CHR$(31)"GOTO1"CHR$(5)
5 POKE631,19:POKE632,13:POKE198,2
6 POKE22,35:LIST10-
10 ************************************
11 *               PRESS ANY KEY        *
12 ************************************

READY.
```

CURSOR CHARACTERS



```
■ - By pressing the cursor down key
■ - By pressing the cursor down key with the shift key
■ - By pressing the cursor right key
■ - By pressing the cursor right key with the shift key
■ - By pressing the home key
■ - By pressing the home key with the shift key
■ - By pressing the control key and key 1
■ -                                 key 2
■ -                                 key 3
■ -                                 key 4
■ -                                 key 5
■ -                                 key 6
■ -                                 key 7
■ -                                 key 8
■ - By pressing the CBM key with    key 1
■ -                                 key 2
■ -                                 key 3   ■ - By pressing key F1
■ -                                 key 4   ■ - By pressing key F2
■ -                                 key 5   ■ - By pressing key F3
■ -                                 key 6   ■ - By pressing key F4
■ -                                 key 7   ■ - By pressing key F5
■ -                                 key 8   ■ - By pressing key F6
■ - By pressing the control key and key 9   ■ - By pressing key F7
■ -                                 key 0   ■ - By pressing key F8
```

COMMODORE 64 OWNERS
The Ultimate Reference Book


Programming the Commodore 64
The Commodore 64 Handbook
Rae West
Level Computer Publications

Programming The Commodore 64
by Rae West

Comprehensive and readable teaching and reference book on the 64. Takes over where Commodore's manual leaves off. Much larger than most computer books. Programs available separately on disk or as pack of 2 tapes – saves keying time.

Topics covered include course in BASIC programming, how BASIC works, extending BASIC, machine-language course, ROM guide and memory-maps etc, thorough coverage of graphics and sound, tape and disk handling hardware.

"Best of all the books . . . required reading for all those who wish to make full use of their 64s" – Jack Cohen.

Programming The Commodore 64 (R. West) £14.90 in UK/Europe. 624 page paperback. 17 chapters & appendices. ISBN 0 9507650 2 3. Published by Level Ltd. (Computer Publications), P.O. Box 438, Hampstead, London NW3 1BH.

Programming The Commodore 64 Disk £8.90 (incs. VAT) ISBN 0 9507650 3 1.

Programming The Commodore 64 Tapes £9.90 (incs. VAT) ISBN 0 9507650 1 X.

Programming The VIC (R. West) £10.90. Large paperback. ISBN 0 950 7650 1 5. "Packed with virtually all the information you are likely to read" – J. Goldsmith.

Programming The PET/CBM (R. West) £18.90. Large paperback. ISBN 0 9507650 0 7. "Undoubtedly the most comprehensive reference I have seen" – Jim Butterfield.

MAIL ORDER FORM

From booksellers/retailers/dealers or by direct mail. Send orders and make cheques payable to Level Ltd (Computer Publications), c/o Biblios Distribution Ltd, Star Road, Partridge Green, Nr Horsham, W. Sussex RH13 8LD.

Quantity	Title	Price	Total
______	Programming The Commodore 64 (West)	£14.90*	______
______	Programming The Commodore 64 Disk	£ 8.90**	______
______	Programming The Commodore 64 Tapes	£ 9.90**	______
______	Programming The VIC (West)	£10.90*	______
______	Programming The PET/CBM (West)	£18.90*	______
		*Add £1 each postage	______
		**Add 50 each postage	______
			______
		TOTAL PAYMENT	______

NAME/ORGANISATION: ____________________

ADDRESS: ____________________

____

____________________ CCI 0386

TOOLKIT IV
1541 DISK UTILITY
COMPLETELY NEW – INCLUDES ALL THIS . . .

DOCTOR V2 – allows you to read and write any track or sector, including extra and renumbered tracks, extra and renumbered sectors, and looks underneath READ ERRORS. Repairs damaged sectors.

FORMATTER – format an entire disk, or format any individual track or half-track from track 0 to 41. Redefine any of 30 parameters including tracks per zone, sectors per track, bit density, data block size, data block fill bytes, header and data block id's, header and tail gaps, off-bytes, syncs etc. This allows you to create or recreate a completely unique disk format; and it formats an entire disk in less than 10 seconds.

HEADER/GAP EDITOR – decodes and displays all header information including off-bytes, checksum and header gap. Rewrite the entire header and header gap. Renumber sectors. Also edit any sector tail-gap. Recover corrupted headers.

ERROR LOOK – the fastest, most thorough error detector ever gives you all necessary parameters for backing up, detects all errors, extra and renumbered sectors, extra and renumbered tracks, half-tracks, from track 0 to 41.

ERROR MAKE – make 20, 21, 22, 23, 27 and 29 read errors on any individual track or sector and redefine any necessary parameters, and even recreate data under the original error. Also includes a method of preventing your disks from being copied by most disk copiers.

FAST DISK COPY – copy a full disk with one drive in less than two minutes. Copy a partially filled disk in even less time.

FAST FILE COPY – transfers files over five times faster than normal, loading and saving.

COMPACTOR – will compact any machine code program. Can compact files by 50%: saves disk space and loading time.

DISK LOOK – the ultimate directory and file manipulation utility. Sort the directory in any way you like. Edit DOS version. Display file start and end addresses. Disassemble any file with standard and unimplemented op-codes. Edit BAM. Unscratch files. Plus more . . .

DRIVE SPEED TEST, DISK ERASE, DISK MON, DISK LOG, BASIC COMPACTOR/UNCOMPACTOR, &: FILEMAKER, make your 1541 play the national anthem, or increase drive head speed and still more that we can't squeeze into this ad (and even a few little surprises we aren't telling anyone about).

TOOLKIT IV is undoubtedly the most comprehensive disk utility available for the 1541 drive, yet it couldn't be more user friendly. Supplied on disk with comprehensive instruction manual. You will wonder why you bought those heavily advertised, more expensive utilities.

FOR C-64 OR C-128 ONLY

BUY IT NOW – £22.95 (inc p/p and fast delivery)

Overseas orders please add £1.00 ***No credit cards please***

**MPS SOFTWARE (DEPT CCI)
36 ALEXANDRA GROVE
LONDON N4 2LF, ENGLAND
01-800 3592**

Previous TOOLKIT owners can upgrade by returning their original disk + £10.00

• COMMODORE 64 • TRANSFER ALL MAJOR TURBOS • AUTOMATIC • NO USER KNOWLEDGE •

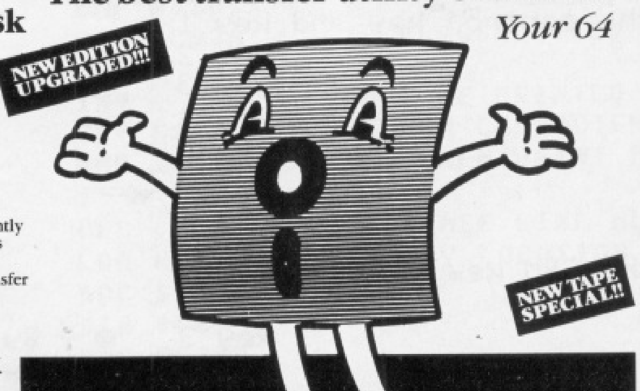
NO HARDWARE • TURBO IDENTIFIER • AUTO LOAD OPTIONS

LOOK AT DOSOFT'S NEW OFFERINGS AND SEE WHAT'S IN THEM FOR YOU

'The best transfer utility of the lot'
Your 64

MegaTransfer Disk

Our complete collection of tape to disk transfer utilities covers *all* the major turbo loading systems, including the latest combination picture/stripe loaders, and individual routines for unusual loaders. • Now incorporates DISKUS 1 (previous price £11) for your standard load tape collection • All transfer is automatic • No special hardware or user knowledge required • Efficient use of disk space • Transferred programs reload independently • MegaTransfer Disk will transfer programs which NO other utility will handle • An essential purchase. Don't confuse MegaTransfer with similar utilities which have severely limited capabilities. **£17**


NEW EDITION UPGRADED!!!
NEW TAPE SPECIAL!!

MegaUtility Disk

A handy collection of utilities to make the best of your 1541 and 64. Very fast. Very convenient. • **AlphaLoad** Disk Turbo Loader. Load your programmes at over FOUR times the normal rate. Example: 200 blocks. Normal speed 130 seconds. With Alphaload just 30 seconds. • **Fast Copy** Backup a whole disk in just 3 minutes. Not for heavily protected commercial disks. • **Turbo File Copy** copy selected programs from your disks at TURBO speed. • **Fast Format** Format your new disks at TURBO speed. • **Pro Sprite** A high class sprite library/editor. 100% machine code. Joystick control. **£12.50**

AND SAVE MONEY TOO!

SAVE! SAVE! SAVE! When you buy any two of **MegaTransfer Disk, MegaUtility Disk,** or **Disk-to-Tape *Plus*** just £24.00 (single disk), or **All Three** at **£29.99** save **£12**

Or save **£33** on our **Complete Collection** (every program in this Ad, including **Professional Disk-to-Tape** and **MegaTape** at only **£39.99** (single disk).

How to get your DoSoftware

All programs for Commodore 64. Send SAE for full details or cash/cheque/PO for fast despatch to:

**DoSoft (Dept Y), 2 Oakmoor Ave,
Blackpool FY2 0EE**

UK postage included. Europe add 75p. Overseas add £1.50 for airmail.

Disk to Tape *Plus*

A versatile collection of Disk-to-Tape routines for single and multipart programs. Featuring our new tape turbo loader with **Visible Screen** and stripey border • **Automatic** disk to tape • Outputs program sections to tape as they load from disk • Selective disk to tape transfer with or without bootloader • Maximum file length 207 blocks • Not for protected commercial disks. • **Professional** version available—includes mastering scheduler and duplication rights—£25.00 **£12.50**

MegaTape

An outstanding new Tape-to-Tape utility for fast loading programs. • Covers *all* the major loading systems • No extra hardware required • All you need is a Commodore 64 and one tape deck • No user knowledge required • Transferred programs load independently at *Turbo* speed with **Visible Screen** and stripey border • **Double Value**—incorporates RBS Plus to convert your slow load programs to turbo load • Also handles RBS and Fastback programs. **£9.50**

DoSoft

You'll Do it Better with DoSoft

• FAST DISK UTILITIES • LOADERS • 3-MIN DISK COPY • FAST DISK FILE COPY • FAST FORMAT •

DISK TO DISK • DISK TO TAPE • TAPE TO TAPE • TAPE TO DISK

Numeric to String converter

Convert any numeric expression into a specified string length with this program from Peter Dennison.

This program will take any numeric expression and convert it into a specified string length. Trailing zeros in the decimal part of the number are displayed, and there is a rounding option. Negative numbers can be formatted in three ways: a leading minus sign, a trailing minus sign, or a trailing CR. The two latter options have obvious implications of great importance for commericial programs. The formatting ensures that in a column of numbers the decimal points are in vertical alignment. The string length LEN is constant regardless of the visual length of the string.

Because of the formatted nature of the string, this program can be used in conjunction with the sort program published in Volume 3 Number 6. In this case negative numbers must have a leading minus sign, but will sort in reverse order i.e. -1. -2, -3....-n. However users can overcome this apparent problem by adding any number to all the numbers in the array to ensure that all negative numbers are converted to positive. My program can then be used with the sort program, followed by a subtraction of the previously added number. The result will be that all numbers are correctly sorted i.e. -n...-3, -2, -1, 0, 1, 2,...n

The syntax is SYS49656, Expression, N1, N2, N3, String variable.

The expression can be any numeric variable which would normally follow LET. If the result of the expression is in expotential format then OUT OF NUMERIC RANGE ERROR is generated.

N1 and N2 format the string, and represent the number of characters to the left and to the right of the decimal point. Any attempt to use variables will generate SYNTAX ERROR. The sum of N1 and N2 must be in the range 1-8, but if N2=0 then N1 can be 9. If the sum of N1+N2 is greater than 8 (or 9) then STRING TOO LONG ERROR is generated.

If the image is too small for the result of the expression then OVERFLOW ERROR is generated.

N3 deals with the rounding and negative number options:
N3=0 rounded with leading minus sign
N3=1 truncated with leading minus sign
N3=2 rounded with trailing minus sign
N3=3 truncated with trailing minus sign
N3=4 rounded with trailing CR
N3=5 truncated with trailing CR
N3>=6 generates ILLEGAL QUNATITY ERROR

The string variable is where the string is deposited.

```
 10 033C           !*****************************!
 20 033C           !                             !
 30 033C           ! NUMERIC TO STRING CONVERTER !
 40 033C           !    WITH IMAGE FORMATTING    !
 50 033C           !                             !
 60 033C           !      BY PETER DENNISON      !
 70 033C           !        NOVEMBER 1985        !
 80 033C           !                             !
 90 033C           !*****************************!
100 033C           !
110 033C           !
120 C1F8           *=49656
130 C1F8           ADRESS         =  $C1EE
140 C1F8           DECIMALS       =  $C1F4
150 C1F8           INTEGERS       =  $C1F3
160 C1F8           LEADERS        =  $C1F2
170 C1F8           ROUNDING       =  $C1F5
180 C1F8           STRING         =  $C1DE
190 C1F8           STRLEN         =  $C1F1
200 C1F8           !
210 C1F8           !  CLEAR WORK AREAS
220 C1F8           !
230 C1F8 A00F                    LDY #15
240 C1FA A900                    LDA #0
250 C1FC 990001 L16              STA $0100,Y
260 C1FF 99DEC1                  STA STRING,Y
270 C202 88                      DEY
280 C203 10F7                    BPL L16
290 C205           !
300 C205           !  EVALUATE EXPRESSION & CONVERT FAC TO ASCII
```

```
310 C205              !
320 C205 20FDAE                   JSR $AEFD
330 C208 20A5A9                   JSR $A9A5
340 C20B 20DDBD                   JSR $BDDD
350 C20E              !
360 C20E              !  GET & VERIFY N1 & N2
370 C20E              !
380 C20E 20FDAE                   JSR $AEFD              !N1
390 C211 2013B1                   JSR $B113              !CHECK ALPHABETIC
400 C214 9003                     BCC L02
410 C216 4C08AF L17               JMP $AF08              !SYNTAX ERROR
420 C219 209EB7 L02               JSR $B79E
430 C21C E00A                     CPX #10
440 C21E 9005                     BCC L31
450 C220 A20E   L01               LDX #14                !ILLEGAL QUANTITY
460 C222 6C0003                   JMP ($0300)            !ERROR
470 C225 8EF3C1 L31               STX INTEGERS
480 C228 20FDAE                   JSR $AEFD              !N2
490 C22B 2013B1                   JSR $B113              !CHECK ALPHABETIC
500 C22E B0E6                     BCS L17
510 C230 209EB7                   JSR $B79E
520 C233 E009                     CPX #9
530 C235 B0E9                     BCS L01
540 C237 8EF4C1                   STX DECIMALS
550 C23A              !
560 C23A              !  CHECK IMAGE SIZE
570 C23A              !
580 C23A E000                     CPX #0                 !NO DECIMAL PLACES
590 C23C D005                     BNE L05
600 C23E A9F6                     LDA #246
610 C240 4C45C2                   JMP L06
620 C243 A9F7   L05               LDA #247
630 C245 18     L06               CLC
640 C246 6DF3C1                   ADC INTEGERS
650 C249 6DF4C1                   ADC DECIMALS
660 C24C 9005                     BCC L04
670 C24E A217                     LDX #23                !STRING TOO LONG
680 C250 6C0003                   JMP ($0300)            !ERROR
690 C253              !
700 C253              !  CHECK IF EXPRESSION IS IN EXPONENTIAL FORMAT
710 C253              !
720 C253 A00F   L04               LDY #15
730 C255 B90001 L09               LDA $0100,Y
740 C258 C945                     CMP #69                !ASCII E
750 C25A F006                     BEQ L07                !IF EXPONENTIAL FORMAT
760 C25C 88                       DEY
770 C25D F00E                     BEQ L08                !ALWAYS
780 C25F 4C55C2                   JMP L09
790 C262 A9C3   L07               LDA #>TEXT1
800 C264 A8                       TAY
810 C265 A9EE                     LDA #<TEXT1
820 C267 201EAB L38               JSR $AB1E              !SEND ERROR MESSAGE
830 C26A 4C62A4                   JMP $A462              !IN LINE #
840 C26D              !
850 C26D              !  CHECK IF EXPRESSION FITS THE IMAGE
860 C26D              !
870 C26D A001   L08               LDY #1
880 C26F B90001 L11               LDA $0100,Y
890 C272 F008                     BEQ L10                !TERMINATOR
```

```
 900 C274 C92E               CMP #46                    !DECIMAL POINT
 910 C276 F004               BEQ L10
 920 C278 C8                 INY
 930 C279 4C6FC2             JMP L11
 940 C27C 88     L10         DEY
 950 C27D 8CF2C1             STY LEADERS                !ACTUAL NUMBER OF
 960 C280 CCF3C1             CPY INTEGERS               !INTEGERS
 970 C283 F007               BEQ L12
 980 C285 9005               BCC L12
 990 C287 A20F               LDX #15                    !OVERFLOW ERROR
1000 C289 6C0003             JMP ($0300)
1010 C28C        !
1020 C28C        !  CALCULATE NUMBER OF LEADING SPACES
1030 C28C        !
1040 C28C AD0001 L12         LDA $0100
1050 C28F 8DDEC1             STA STRING
1060 C292 ADF3C1             LDA INTEGERS
1070 C295 38                 SEC
1080 C296 EDF2C1             SBC LEADERS
1090 C299 8DF2C1             STA LEADERS
1100 C29C A000               LDY #0
1110 C29E CCF2C1 L14         CPY LEADERS                !PLACE LEADING SPACES
1120 C2A1 F009               BEQ L13                    !BEFORE COMPUTED NUMBER
1130 C2A3 A920               LDA #$20
1140 C2A5 99DFC1             STA STRING+1,Y
1150 C2A8 C8                 INY
1160 C2A9 4C9EC2             JMP L14
1170 C2AC        !
1180 C2AC        !  TRANSFER EXPRESSION TO STRING
1190 C2AC        !
1200 C2AC A200   L13         LDX #0
1210 C2AE BD0101 L03         LDA $0101,X
1220 C2B1 F008               BEQ L15
1230 C2B3 99DFC1             STA STRING+1,Y
1240 C2B6 C8                 INY
1250 C2B7 E8                 INX
1260 C2B8 4CAEC2             JMP L03
1270 C2BB        !
1280 C2BB        !  GET & VERIFY N3
1290 C2BB        !
1300 C2BB 20FDAE L15         JSR $AEFD
1310 C2BE 2013B1             JSR $B113                  !CHECK ALPHABETIC
1320 C2C1 9003               BCC L35
1330 C2C3 4C08AF             JMP $AF08                  !SYNTAX ERROR
1340 C2C6 209EB7 L35         JSR $B79E
1350 C2C9 E006               CPX #6
1360 C2CB 9005               BCC L34
1370 C2CD A20E               LDX #14                    !ILLEGAL QUANTITY
1380 C2CF 6C0003             JMP ($0300)                !ERROR
1390 C2D2 8EF5C1 L34         STX ROUNDING
1400 C2D5        !
1410 C2D5        !  COMPUTE STRING LENGTH (TRAILING ZEROS)
1420 C2D5        !
1430 C2D5 A0FF               LDY #$FF
1440 C2D7 C8     L30         INY
1450 C2D8 B9DEC1             LDA STRING,Y
1460 C2DB F007               BEQ L20                    !NO DECIMAL POINT
1470 C2DD C92E               CMP #46                    !DECIMAL POINT
1480 C2DF D0F6               BNE L30
1490 C2E1 4CE9C2             JMP L36
```

```
1500 C2E4 A92E   L20          LDA #46               !DECIMAL POINT
1510 C2E6 99DEC1              STA STRING,Y
1520 C2E9 98     L36          TYA
1530 C2EA 18                  CLC
1540 C2EB 6DF4C1              ADC DECIMALS
1550 C2EE 8DF1C1              STA STRLEN
1560 C2F1               !
1570 C2F1               !  PLACE TRAILING ZEROS
1580 C2F1               !
1590 C2F1 A8                  TAY
1600 C2F2 B9DEC1 L26          LDA STRING,Y
1610 C2F5 C930                CMP #$30
1620 C2F7 BOOD                BCS L21
1630 C2F9 C92E                CMP #46               !DECIMAL POINT
1640 C2FB F009                BEQ L21
1650 C2FD A930                LDA #$30              !DECIMAL ZERO
1660 C2FF 99DEC1              STA STRING,Y
1670 C302 88                  DEY
1680 C303 4CF2C2              JMP L26
1690 C306               !
1700 C306               !  DO ROUNDING
1710 C306               !
1720 C306 ADF5C1 L21          LDA ROUNDING
1730 C309 2901                AND #1
1740 C30B D043                BNE L37
1750 C30D 88                  DEY
1760 C30E 18                  CLC
1770 C30F B9E0C1              LDA STRING+2,Y
1780 C312 6905                ADC #5
1790 C314 C93A                CMP #$3A              !DECIMAL 10
1800 C316 9038                BCC L37               !ROUNDING COMPLETE
1810 C318 4C3BC3              JMP L32
1820 C31B B9DFC1 L27          LDA STRING+1,Y
1830 C31E 18                  CLC
1840 C31F 6901                ADC #1
1850 C321 99DFC1 L18          STA STRING+1,Y
1860 C324 C93A                CMP #$3A
1870 C326 9028                BCC L37
1880 C328 38                  SEC
1890 C329 E90A                SBC #10
1900 C32B 99DFC1              STA STRING+1,Y
1910 C32E 88                  DEY
1920 C32F COFF                CPY #$FF
1930 C331 D008                BNE L32
1940 C333 A9C4                LDA #>TEXT2
1950 C335 A8                  TAY
1960 C336 A903                LDA #<TEXT2
1970 C338 4C67C2              JMP L38
1980 C33B B9DFC1 L32          LDA STRING+1,Y
1990 C33E C92E                CMP #46               !DECIMAL POINT
2000 C340 FOQA                BEQ L19
2010 C342 C920                CMP #$20              !SPACE
2020 C344 DOD5                BNE L27
2030 C346 18                  CLC
2040 C347 6911                ADC #$11              !CONVERT SPACE TO
2050 C349 4C21C3              JMP L18               !DECIMAL 1
2060 C34C 88     L19          DEY
2070 C34D 4C1BC3              JMP L27
2080 C350               !
2090 C350               ! REMOVE DECIMAL POINT IF N2=0
```

```
2100 C350              !
2110 C350 ADF4C1 L37          LDA DECIMALS
2120 C353 D003                BNE L28
2130 C355 CEF1C1              DEC STRLEN
2140 C358              !
2150 C358              !  CHECK IF NEGATIVE NUMBER
2160 C358              !
2170 C358 ADDEC1 L28          LDA STRING
2180 C35B C92D                CMP #45                    !MINUS SIGN
2190 C35D D037                BNE L25
2200 C35F ADF5C1              LDA ROUNDING
2210 C362 4A                  LSR A
2220 C363 F031                BEQ L25                    !LEADING MINUS SIGN
2230 C365 AA                  TAX
2240 C366 A920                LDA #$20
2250 C368 8DDEC1              STA STRING
2260 C36B E002                CPX #2
2270 C36D F00F                BEQ L29
2280 C36F ACF1C1              LDY STRLEN
2290 C372 A92D                LDA #45                    !MINUS SIGN
2300 C374 99DFC1              STA STRING+1,Y
2310 C377 C8                  INY
2320 C378 8CF1C1              STY STRLEN
2330 C37B 4C96C3              JMP L25
2340 C37E ACF1C1 L29          LDY STRLEN
2350 C381 A920                LDA #$20
2360 C383 99DFC1              STA STRING+1,Y
2370 C386 C8                  INY
2380 C387 A943                LDA #67                    !C
2390 C389 99DFC1              STA STRING+1,Y
2400 C38C C8                  INY
2410 C38D A952                LDA #82                    !R
2420 C38F 99DFC1              STA STRING+1,Y
2430 C392 C8                  INY
2440 C393 8CF1C1              STY STRLEN
2450 C396              !
2460 C396              !  GET & VERIFY STRING VARIABLE
2470 C396              !
2480 C396 A000   L25          LDY #0
2490 C398 20FDAE              JSR $AEFD
2500 C39B A001                LDY #1
2510 C39D B17A   L24          LDA ($7A),Y
2520 C39F C924                CMP #36                    !DOLLAR SIGN
2530 C3A1 F00D                BEQ L22
2540 C3A3 C002                CPY #2
2550 C3A5 D005                BNE L23
2560 C3A7 A216                LDX #22                    !TYPE MISMATCH
2570 C3A9 6C0003              JMP ($0300)                !ERROR
2580 C3AC C8     L23          INY
2590 C3AD 4C9DC3              JMP L24
2600 C3B0              !
2610 C3B0              !  PERFORM MODIFIED 'LET' FUNCTION
2620 C3B0              !
2630 C3B0 208BB0 L22          JSR $B08B
2640 C3B3 8549                STA $49
2650 C3B5 844A                STY $4A
2660 C3B7 A9C1                LDA #>STRING
2670 C3B9 8DF0C1              STA STRLEN-1
2680 C3BC A9DE                LDA #<STRING
2690 C3BE 8DEFC1              STA STRLEN-2
2700 C3C1 A9EB                LDA #<ADRESS-3
```

```
2710 C3C3 8550                STA $50
2720 C3C5 A9C1                LDA #>ADRESS
2730 C3C7 8551                STA $51
2740 C3C9 207DB4              JSR $B47D
2750 C3CC ADF4C1              LDA DECIMALS
2760 C3CF EEF1C1              INC STRLEN                 !LEADING SPACE/MINUS
2770 C3D2 4CD5C3              JMP L33
2780 C3D5 A2DE    L33         LDX #<STRING
2790 C3D7 A0C1                LDY #>STRING
2800 C3D9 2088B6              JSR $B688                  !TFR STRING TO MEMORY
2810 C3DC A000                LDY #0
2820 C3DE ADF1C1              LDA STRLEN                 !FINAL STRING LENGTH
2830 C3E1 9149                STA ($49),Y
2840 C3E3 C8                  INY
2850 C3E4 A9DE                LDA #<STRING
2860 C3E6 9149                STA ($49),Y
2870 C3E8 C8                  INY
2880 C3E9 A9C1                LDA #>STRING
2890 C3EB 9149                STA ($49),Y
2900 C3ED 60                  RTS                        !BACK TO BASIC
2910 C3EE         !
2920 C3EE         ! ERROR MESSAGES
2930 C3EE         !
2940 C3EE 4F5554 TEXT1        TXT "OUT OF NUMERIC RANGE"
2950 C402 00                  BRK
2960 C403 524F55 TEXT2        TXT "ROUNDING OVERFLOW"
2970 C414 00                  BRK
```

ATTENTION ALL PROGRAMMERS!!

You may be an experienced programmer – you may be a beginner. Either way, you may have come across some useful tips which could make life easier for other CCI readers.

Or maybe you have written a program, either in Basic or assembly language, that you feel is worthy of publication.

CCI always welcomes contributions from readers. We will publish any suitable listings or programming advice…and we'll pay you for it!

If you wish to contribute something for publication, we require programs on cassette or disk, together with any additional explanatory information and a CLEAR printout of any listings. (The better the original printout, the better the reproduction in the magazine.)

Please enclose a SAE if you wish to have your program returned to you. Please package disks or cassettes carefully!

The address to send contributions to is:

The Editor,
Commodore Computing International,
Finsbury Business Centre,
40 Bowling Green Lane,
London EC1R ONE

Don't forget…CCI welcomes programs for all Commodore computers – 64, Plus/4, C16, 128 plus the VIC and PET.

COMMODO

Don't miss out!

With the growing popularity of Commodore Computing International Magazine, newsagents and bookstalls sell out quickly. More and more frustrated readers wanting the one magazine every Commodore owner needs are finding they are missing out and some months having to do without the latest news, reviews and vital feature articles and programs.

The popular solution is to place an order for your Commodore Computing International Magazine with your newsagent or by direct subscription to us.

A subscription means you get the magazine delivered to your door. It saves you time and makes sure you don't lose out on what's happening in the Commodore world.

Send in the subscription coupon below and get the best Commodore magazine the easy way — through your letterbox. Don't miss out on the best, mail the coupon **now**.

(If you don't want to cut up the magazine, we're happy to have a photocopy of the coupon or a request on plain paper.)

Commodore — Subscription Order Form

To Subscriptions Manager, Commodore Computing International,
40 Bowling Green Lane, London EC1R 0NE. Tel: 01-278 0333 Telex: 267247 FINSEC

Please send me 12 issues of *Commodore Computing International*

☐ Cheque enclosed

☐ Please debit my Access

Card No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐ Subscription rate U.K. £15.00

☐ Europe £20.00

☐ Outside Europe £28.50

Expiry date: ______

Cheques should be made payable to:
CROFTWARD LIMITED

Name ______

Address ______

County ______ Post Code ______

Telephone (home) ______ (business) ______

Signed ______ Date (Subscription to commence)

Tape It on Pet

Transfer programs from disk to tape easily with this program from A Eskelson written for the PET. The author suggests that the program will also work on the 64

The program TAPEIT is designed for use on a Commodore PET or C64. TAPEIT was produced when several copies of a suite of programs on tape was required, and it seemed that it was a waste of time to wait around during this process, after all repetitive operations are what computers are best at. There are several ways of transferring programs from disk to tape, but most make use of direct access commands to the disk and a fair amount of machine code is usually needed.

TAPEIT produces the same effect by making use of Commodore's screen editor. This is done by printing the commands to the screen and then forcing the computer to believe that they have been typed in by hand. This is done by POKEing a sequence of carriage return characters into the keyboard buffer. If there was text under the cursor when the return was performed, and if that text was a command, then that command would be executed. It is this method that TAPEIT uses, so all the program has to do is a little printing to the screen in the correct places.

Program description

Lines 70 – 120 Tests for PET or C64

The C64 has RAM at location 49152 so it can be changed with a poke. Just in case this is being used for program use the original value is restored after the test. The PET has ROM or nothing at this location so POKEing has no effect.

Lines 130 – 180 Setup values for the PET

Lines 190 – 230 Setup values for the C64

The differences in the system locations of the C64 and the PET require different parameters, so the values for the working memory and the keyboard buffer and keyboard queue need to be changed. The variable DD holds the location of a spare byte of memory, KQ holds the location of the keyboard queue, and KB the location of the keyboard buffer.

Lines 250 – 320 read the names of the programs into the data array, this has to be reset every time the program is loaded, so to keep the point in the array that the program has reached the location DD is used as this is not reset when the program is reloaded.

Lines 330 – 390 use the location DD to point to the position in the array of the next program to transfer.

Lines 400 – 490 update the location DD and print the commands onto the screen.

Lines 500 – 580 set up seven carriage returns in the keyboard buffer.

Program Use

The program is prepared for use by editing or adding, as required the lines from 590 onwards. Simply insert the names of the programs that you wish to transfer as data. eg

590 DATA "PROG1"
600 DATA "PROG2"
nnnn "END"

The last entry in the list must be the word "END", remember the names and the word END must be inside quotes.

Reserve the program using the same name as in line 460 (TAPEIT) if you wish to change the name you must also change line 460. Ensure that the programs that you wish to transfer are on the disk, load TAPEIT and RUN. The first time that the program is run, you will get the normal PRESS PLAY AND RECORD ..... message, but from then on the process is automatic, assuming that your tape does not run out!.

```
10 REM THIS WILL READ THE FILES
20 REM CONTAINED IN B$ AND
30 REM COPY THEM TO TAPE.
40 REM THE SCREEN EDITOR IS
50 REM USED TO PERFORM THE LOAD
60 REM
70 REM FIND OUT IF PET OR 64
80 A=PEEK(49152)
90 POKE 49152,45
100 IF PEEK(49152)=45 THEN 120
110 GOTO 130 :REM PET DATA
120 POKE 49152,A:GOTO 190
130 REM SETUP FOR PETS
140 KQ=158:KB=623:DD=0
150 PRINT "♥       DISK TO TAPE"
160 PRINT "      RUNNING ON PET"
170 FOR T=1 TO 1000 :NEXT
180 GOTO 250
190 REM SETUP FOR C64
200 KQ=198:KB=631:DD=251
210 PRINT "♥       DISK TO TAPE"
220 PRINT "      RUNNING ON C-64"
230 FOR T=1 TO 1000 :NEXT
```

```
240 REM
250 REM READ FILENAMES
260 DIM A$(20):REM MAX NUM. OF FILES
270 I=1
280 READ BB$
290 IF BB$="END"THEN310
300 A$(I)=BB$:I=I+1:GOTO280
310 MX=I+1:REM NUMBER OF FILES
320 IF PEEK(DD)>MX THEN POKE DD,1
330 REM
340 REM NOW GET THE FILE AND SAVE
350 REM IT TO TAPE
360 REM
370 A=PEEK(DD)
380 IF A=I THEN POKE DD,1:STOP
390 B$=A$(A):REM GET FILE NAME
400 A=A+1:POKE DD,A
410 PRINT"♥QQ"
420 PRINT "LOAD";CHR$(34);B$;CHR$(34);",8"
430 PRINT"QQQ"
440 PRINT "SAVE";CHR$(34);B$;CHR$(34)
450 PRINT"QQ"
460 PRINT "LOAD";CHR$(34);"TAPEIT";CHR$(34)",8"
470 PRINT"QQQ"
480 PRINT "RUN"
490 PRINT"S"
500 POKE KQ,7
510 POKE KB,13
520 POKE KB+1,13
530 POKE KB+2,13
540 POKE KB+3,13
550 POKE KB+4,13
560 POKE KB+5,13
570 POKE KB+1,13
580 END
590 DATA "PROG1"
600 DATA "PROG1"
610 DATA "PROG1"
620 DATA "PROG1"
630 DATA "END"
```

ATTENTION PROGRAMMERS!!

You may be an experienced programmer – you may be a beginner. Either way, you may have come across some useful tips which could make life easier for other CCI readers.

Or maybe you have written a program, either in Basic or assembly language, that you feel is worthy of publication.

CCI always welcomes contributions from readers. We will publish any suitable listings or programming advice...and we'll pay you for it!

If you wish to contribute something for publication, we require programs on cassette or disk, together with any additional explanatory information and a CLEAR printout of any listings. (The better the original printout, the better the reproduction in the magazine.)

Please enclose a SAE if you wish to have your program returned to you. Please package disks or cassettes carefully!

The address to send contributions to is:

The Editor,
Commodore Computing International,
Finsbury Business Centre,
40 Bowling Green Lane,
London EC1R ONE

Don't forget...CCI welcomes programs for all Commodore computers – 64, Plus/4, C16, 128 plus the VIC and PET.

1541 device number changes

With the recent price reductions on the 1541 disk drive, there has been a considerable increase in the number of people who own a disk drive. This price reduction has also caused many disk drive owners to consider a second drive to reduce the number of times a disk has to be changed over and to increase the amount of on line data available. The disk drive is designed to allow up to four drives to be attached at once. In order to do this, the drive numbers must be changed.

There are two methods to change the device number. First is the software method which is ideal if an additional drive is to be used for only a short time – for example if you have borrowed one from a friend. This method is quite well covered by the 1541 Users Manual.

The second method is the hardware method which changes the device number more permanently thus allowing the second drive to be used as soon as switched on. The description in the Users Manual is not very clear however and, on checking my disk drive, not very accurate either.

It is hoped that this article will help to make it clearer.

1. Remove all leads from the disk drive. It is especially important to ensure that the mains lead is removed.

2. Turn the drive upside down. This will reveal four x-point screws recessed about 3cm below the base, one in each corner.

3. With a x-point screwdriver remove the four screws and place them somewhere safe.

4. Hold the top and bottom of the drive firmly together and turn it the right way up.

5. Carefully remove the top cover by simply holding the sides and lifting, place the top cover safely out of the way.

6. Compare the drive with the diagram making sure that the front of the drive is in the same position as the front of the drive in the diagram.

7. On the circuit board 16cm from the front and 8cm from the left hand side (looking from the front) you will observe two small circles, one behind the other, made up of what look like back to back 'D's. These are what governs the disk drive device number. The small inter-connecting link between the 'D's must be broken to change the device number.

If you wish to change to device number 9, then just break the link on the front circle using a knife or other suitable implement and rebuild the drive in reverse order. For device number 10, break only the rear link and for device number 11, break both links.

8. Having reassembled the disk drive, carry out a test with just one disk drive connected to ensure the modification was successful. If the device number has not changed it will most likely be due to an incomplete breaking of the link.

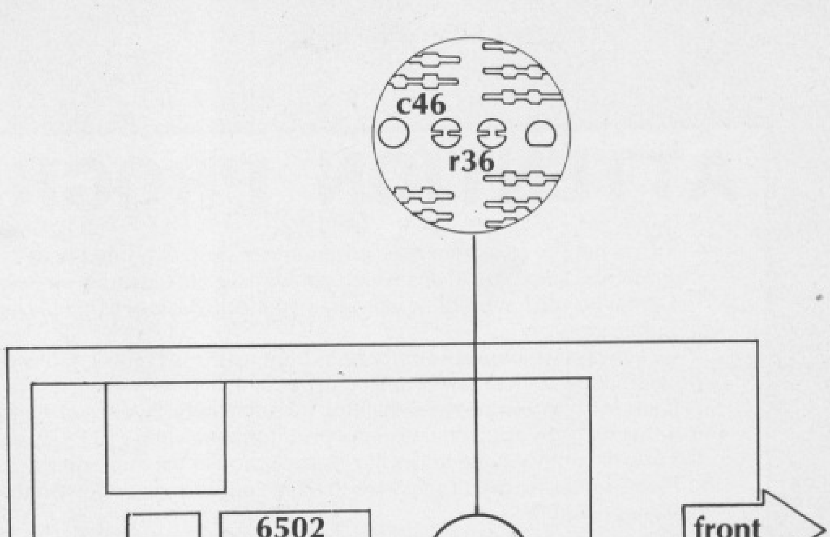
This method of conversion works because when the drive is turned on, one of its start up tasks is to check these links to get the device number which it then stores in RAM. When the command is sent down the serial bus telling a device to prepare to reciave a message or to prepare to send a message the disk drive checks against this number to see if the command was meant for it. If it is it can then reply.

For those interested in the more technical side the following is what happens in detail.

The two links discussed above are connected to Veratile Interface Adapter number 1 port B bits 5 and 6 at address $1800 (6144 decimal). These bits are normally set to 1's but if the links are still connected they pull the bits down to 0's. When the disk drive is turned on the start up routine reads port B and isolates bits 5 and 6. These are then sifted to positions 0 and 1 thus creating the number to add to 8 to find the device number. As well as adding 8 a further $40 (64 decimal) is added to produce the code for TALK and stored in location $78 (120 decimal) for later use. The code for LISTEN is produced by adding $20 (32 decimal) and stored in location $77 (119 decimal).

These numbers are produced automatically by the Kernal routines when using the computer, both from basic or machine code using the standard Kernal routine calls, but should be looked out for if accesing the Kernal more directly.

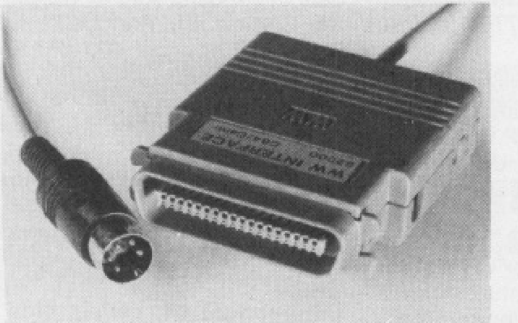
Michael Tinker



ADVERTISERS DIRECTORY MARCH 1986

Anco	56
Argus	37
Calco Software	16,45
Cascade Games	43
Chromasonic Computers	65
Compumart	47
Datel Electronics	16
Dimension Computers	25
Direct Mail Music	18
DoSoft Ltd	68
Evesham Micros	45
FCC Systems	79
Graf Sales	19
H&P Ltd	50
Joreth Music	21
Konix Computer Products	29
Level Ltd	68
Llamasoft	41
MCT Ltd	24
Micropro Int	11
Micronet 800	13
MPS Software	68
Pitmans Publishing	IBC
Precision Software	59
Screens Microcomputers	56
Selec Software	56
64 Software Centre	32
64 Supplies Co.	21
Supersoft	OBC
Tasman Software	6
Tri-Logic	79
Trojan Products	24
Tynesoft	IFC
Wigmore House	21

CENTRONICS INTERFACES



MODEL 92008/G – DOES IT ALL!

Full Commodore graphics and special characters, tabs, dot graphics etc. Plus 8K buffer. **£64.99**

ALSO

MODEL 92000 – less graphics £49.99
MODEL 92000/G – with graphics, no buffer £59.99

All models software transparent – no driver needed.
Connect to C16 or Plus 4 (with optional mains adaptor), VIC 20, C64 or C128 or daisy chain to disk chain.
Includes printer lead – nothing more to buy.

FCC SYSTEMS LIMITED
THE LODGE, MOORLANDS ROAD
MERRIOTT, SOMERSET TA16 5NF
TEL: CREWKERNE (0460) 73442
PRESTEL MAILBOX 046073442

Prices include VAT
Please add £1.00 p+p

DEALER ENQUIRIES
MOST WELCOME

** TAPE BACK-UP DEVICES FOR VIC 20 CBM 64 C128 **

DCL 1 INTERFACE The DCL 1 links two Datasettes, so that a back-up can be made directly from one datesette to a second datasette without the program entering the computer. No software needed Back-up All programs including Turbos etc.
* Thousands sold * ORDER AS DCL1 PRICE **£10.00**

DCL4 INTERFACE You can make a back-up copy on either a second datasette or on a standard audio recoder with this interface without the program entering the computer. No software needed. A LED data monitor shows the start & end of programs. Back-up ALL programs including Turbos etc.
* Very Popular * ORDER AS DCL 4 PRICE **£17.00**
NOW WITH IMPROVED CIRCUITRY

DCL4A INTERFACE SIMILAR to the DCL 4 but fitted with an Audible data monitor.
** NEW ** ORDER AS DCL 4A PRICE **£18.50**
NOW WITH IMPROVED CIRCUITRY

* NEW * TAPE TO DISK * NEW * TAPE TO DISK * NEW *

By using a unique user programmable battery Back-up ram cartridge, trilogics tape to disk system will transfer most programs from tape to disk. The operating software is downloaded from disk so not only can you use the module or tape to disk, but also to emulate most rom based programs simply by loading in the appropriate software from disk. You can even use it as your omma customised kernal rom emulator , etc etc.

For only £29.95 you will receive a PCM 1 programmable rom cartride, tape to disk and 6T loader software, 3 'Function Control Adaptors' which will allow you to: (1) Program the module, (2) Emulate roms, (3) Perform tape to disk transfer, plus simple instructions or this easy to use, amazing new cartridge, order as PCM 1.
ONLY **£29.95** FULLY INCLUSIVE

** NEW **

C128 RGBI to video adaptor enables you to use one TV or monitor in any mode. Switch selects between video & RGB outputs,Versions available for monitor and/or TV SAE for details from **£29.95**

** FAST CBM 64 REPAIRS **

Standard service including parts. Labour. Postage. VAT £27.50
Express service as above but return of post service £34.50
Replacement CBM 64 power packs £29.50
1541 Disk drive alignment fully inclusive £14.90
Please state faults. The above prices cover electrical parts, replacement keyboard, case, pcb or power supply extra. Please phone before sending yout computer.

** FREE CATALOGUE, Please send 17p stamp **

** FAST MAIL ORDER SERVICE. ALL PRICES FULL INCLUSIVE **
** PLUS 10 DAY MONEY BACK GUARANTEE ON BACK-UP DEVICES **

Cheaper prices to callers to our shop at 329 Tong Street, Bradford 4. Please phone first to check availability. Please send all returns/repairs to our shop.

PAYMENT ACCEPTED BY, CASH, CHEQUE,/PO, MONEY ORDER, BANKERS DRAFT, TRANSCASH (For Transcash order and pay at any Post Office, our account No. is 650 3659 EXPORTS Please add £1.00 payment in sterling only please.

TRILOGIC
29 Holme Lane
Bradford BD4 0QA
Tel: 0274 684289

CLASSIFIED

SELL
your programmes in Italy
on a national scale.
Samples, details to:
Marketing Director, ISCAI SRL
Via Fabbio Filzi 27
20124 Milano, Italy.

KNOCKDOWN PRICES
on
PLUS4/C16 SOFTWARE
with over
125 TITLES TO CHOOSE FROM
DISCOUNTS FROM 10%-50%
INCLUDING MANY OF THE LATEST TITLES
TO RECEIVE YOUR FREE LIST SEND SAE (A2) TO:
Venturegate Ltd
(Soft list C16/Plus4)
17 Harold Road, Leeds LS6 1PR
W. Yorkshire England.

For sale for PET –
6502 Assembler, MicroChess, DTL Compiler and Visicalc.
Open to offers.
Phone 0455 615602
after 7pm

C64 & C2N cassette £140, 1701 monitor £145, 1541 disk drive £140. All hardly used, all boxed except C64. Also joystick, software, books, disks £50, near offers considered. Tel:Minster (Sheppey); 873437.

I am searching for C64 club. Please contact Bertucci Stefano, W Monfalcone 29/C, 19100 La Spezia, Italy.

Commodore 64, boxed, as new with C2N data recorder, 24 original programs, joystick all in v.g.c. £145 o.n.o. Tel (0362) 4497 or write: Mitchell Wright, 9 Moorgate Cottages, Southend Dereham, Norfolk NR19 1BD.

CBM 64 Modem £45. Data 20 Rom pack allows 40/80 columns text £30. Simons Basic Rom £15. Lemans, Pinball Spectacular, International Soccer, Wizard of Wor Rom games £10 each. Phone 01-561 7112 after 3pm.

Will swap CBM 64 games worth £150 for a 1541 disk drive. New releases like Dropzone, Hacker, Speed King. Tel:055-932 2475 after 6.30pm.

CBM 64 Easy Script, Easy Spell, Easy Calc and Simons Basic. All as new £20 each. Wanted CBM 64 disk drive Revealed by Nick Hampshire. Phone 0580 291291.

CBM 64 10 disks + 100 machine code games for only £35. Not pirate copies! Send money to Oskar Katona Stockrosv 9G, 52300, Ulrice Hamn, Sweden.

1541 Alignment Service £12.50. Fast turn around. Send your unit to: B. Miller, 31 Greenway Rd, Widnes, Cheshire WA8 6HE. Please enclose the head vibration card and cheque payable to: B. Miller.

Finnish 64'er wishes to swap original progs. Disk only. Have already many titles. Also fancy for tips + info! Anyone in the world, contact soon! Lists to:Timo Kouhia, 08680 Muijala, Finland. Bye!!!

Vizawrite/Vizaspell (disk) £65 Simon's Basic £25 extended Basic for C64 (tape) £12. Tel: 01-777 5522.

I want to swap CBM 64 software with people all over the world. Disk only. Please send your list to Tom Mustonen Louhikkotie 15bc 457, 00770 Helsinki, Finland.

Commodore 128 person wishes casual correspondence and program exchange. Send disks to Mark Brown, P.O.Box 583, Lake Orion, M1 48035, U.S.A. C64 correspondence welcome. Disk replies sent.

Original games on disk for CBM64 for sale. Dragonworld Adventure, brand new, £12 (RRP £19.95), Colossus Chess 20, £6 (RRP £12.95), both complete with booklet. Tel (08446),543, evenings or weekend.

Wanted 1541 disk drive. In good cond. and must come with few blank disks. Will consider 1540 disk drive in good cond. Tel:061 764 9318 (Manchester area).

64 professional system – 64, 1541, MPS801 plus £300 of business and utility software. All boxed, under guarantee – carriage will be paid £450 o.n.o. secures – phone Sheffield (0742) 662005.

Swap Bugblaster, Killer Watt, Confuzion, 1985 – The Day After, Pank Planet, Bat Attack and Haunted House for any latest Top Ten hit game (C64). Phone 01-274 9820 after 6pm.

Wanted and needed urgently. Very, very cheap disk games or software for 1541 disk drive, lots of new titles mainly, and also blank disks. Please phone Hayley on 01-958 8051.

1541 disk drive, boxed and as new plus ten disks with some software £100. Easy script £30. Easyspell £20. Phone Atherton (0942) 892228.

CBM 64 Software to swap. Many up to date titles. Send lists to Warren Craigie, 29, Bellfield St, Portobello, Edinburgh EH1S 2BR or phone 031-657 1423 (disk only).

Swap C-64 software, also interested in buying some and in exchanging letters and tips. Please wrtite to Bernd von Osten, Krumwehl 35, D-2213 Wilster, Germany especially London and American freaks!

Commodore 64, perfect order, boxed with some games £850. Also Easy Script 64/128 boxed with manual £250. Both for £100. 07914 88360.

CBM 64 1547, C2N MPS 801 oystick. Loads of disk and tape software and books. Price excludes postage and package. Quick sale. Karl Bate, 11 Caledonia Rd, Quarry Bank, Staffordshire DYS 2LF.

British Battleships 1892 – 1960 CBM 64. Four referential/educational cassette, volumes £2.85 each or information from C.Lewis, 84 Station Rd, Wraysbury, Berks TW19 5NH.

For Sale – 1541 Disk drive. Brand new. In box with manual and demo disk, £120. Tel Didcot (0235) 818893 anytime.

Money Off Vouchers

for CCI Readers

CCI has obtained special money-saving offers on games and other interesting products for the Commodore 128/64, Plus/4 and C16 computers. All you have to do is send the appropriate voucher plus the correct amount *direct* to the supplier and you will get the value of the voucher deducted from the usual price.

Don't send photocopies and don't send vouchers to CCI as that will delay your order, which will be sent to you direct from the supplier.

Look for more *free* special money-off vouchers in forthcoming issues of Commodore Computing International Magazine.

C16

50p OFF

Death Race 16

C16 Computer Game
(available also for the VIC20 at £1.99)

To: Atlantis Software Ltd
19 Prebend Street London N1 8PF
Tel:01-226 6703
Please send me 'Death Race 16' at £2.49/*usual price £2.99*

Name

Address

C16

50p OFF

Space Escort

Computer Game
(available also for the VIC20 at £1.99)

To: Atlantis Software Ltd
19 Prebend Street London N1 8PF
Tel:01-226 6703
Please send me 'Space Escort' at £2.49/*usual price £2.99*

Name

Address

Plus/4

£1 SAVING

Winter Olympics

To: Tynesoft, Freepost NT873, Unit 3, Addison Industrial Estate, Blaydon,
Tyne and Wear NE21 4BR
Please send me 'Winter Olympics' at £5.95/*usual price £6.95* (Plus 4 only)

Name

Address

Plus/4

£1 SAVING

on Starter Pack II
(4 games: Vox; Water Grand Prix; Appollo Rescue; Autobahn)

To: Tynesoft, Freepost NT873, Unit 3, Addison Industrial Estate, Blaydon,
Tyne and Wear NE21 4BR
Please send me 'Starter Pack II' at £11.95/*usual price £12.95*

Name

Address

C64

£2 VOUCHER

Encounter
A spectacular 3-D Combat Game (C64 only)

To: Novagen Software Limited, 142 Alcester Road, Birmingham B13 8HS
Tel: 021-449 9516
Please send me 'Encounter' at £7.95/*usual price £9.95*

Name

Address

C64

£2·50

off Commodore Sound Studio

To: Direct Mail Music 627/631 High Road Leytonstone London E11 4PA
Tel: 01-339 3048
Please send me Commodore Sound Studio at £12.49/*usual price £14.99*

Name

Address

C64

MUSIC FOR THE 64

Direct Mail Music is one of the UK's leading retail sources for Commodore music products.

£5

Off Commodore Sound Sampler
usual price £69.99

To: Direct Mail Music 627/631 High Road Leytonstone London E11 4PA
Tel: 01-339 3048
Please send me Commodore Sound Sampler at £64.99

Name

Address

CLASSIFIED

Zero Centronics Interface boxed. Unused suit VIC 20 C64 C128 new £45. Bargain at £30. Phone Bob Harris on Leeds (0532) 678074.

Wanted – Ant Attack, Zaxxon, Elite, Jet Set Willy, Assembler 64, Scrabble, Tapper Rocket Roger Seaside Special. Please ring 0530 810885 after 6.00pm for my list of swaps.

European Commodorite. Wants disk correspondent to exchange programs, information, views. Own Basic Pascal + logo programs. Prefer U.S.A., England friends. Write George Voutzoulidis P.O. Box 18197 11610, Athens, Greece.

Wanted Vic 20 16K or 32K expansion pack. Please write giving details and price to: Stephen Higgins, 3 Woodside Rd, Holly Hall, Dudley, W. Mids DYZ OUA.

CBM 8050 IMB dual disk drive with dust cover, leads, manual and disk E280. Also JCL C64 to 1EE 488 cartridge for above £30. Phone Brian on Meophm (Kent) 0474 812523.

CBM 801 printer for sale £120. Send letters or cheques to G Saxton, 20 Castle Walk, Hyson Green, Nottm, NG7 602.

For sale CBM 64, Disk drive, Simon's Basic and a dust cover. All in very good condition. Cost over £500. Will accept £250. Phone: 01-759 1007 after 6pm.

CBM 64 + cassette unit +modem + printer + software + other extras. Cost over £1,000. Sell for £500. Mark Hawley, P.O. Box 264. Sheffield S6 2PY.

Needed urgently, faulty CBM 64 and 1541 disk drive to repair my own faulty computer and drive. Contact Talat Hussain on Keighley (0535) 67583 daytime only. Please hurry, suffering from heavy withdrawal symptoms.

Pet enthusiast moving house. Must sell collection of disk drives, computers, spares, etc. Phone for details or S.A.E. for list. Cachart, 26 Duke St, Middleton, Wirksworth, Derby. Tel: 062982 3207 evenings.

CBM 128 Plus 1570 disk drive, brand new. Nearest offer to £450 secures. Tel: Chris on (0524) 762197

For Sale "Doubler" tape back-up device. 100% guaranteed. Ten pounds plus P&P. Send for details to: 8 Lovell Place, Rotherhithe, London SE16 1QQ. (T.Jones).

Commodore original software, worth over £275. Swap for MPS 803 printer or 1520 plotter and SFX sound sampler or sell for £120. Software includes Shadowfire, Paradroid, Fist, Frankie, Rats, Ring Leamington Spa. (0926) 22742.

C16 Starter pack with games and joystick for sale. £100 or nearest offer. Phone (0337) 30623.

For under fives. Mr T's Alphabet Games £5. (new £9.95). Also Flash Cards and Spelling £3. Tel: 01-650 2808

3040 Twin disk drive £325 2001 upgrade to 4032. With reset switches built in sound box and 32K Ram expansion. Any reasonable offer or exchange amateur radio/64 W.H.Y. Wirksworth 062982 3207.

HERE'S MY CLASSIFIED AD

I make this________ words, at ________ per word so I enclose £ ________

Please continue on a separate sheet of paper for trade advertisements.

Name________

Address________

________ Telephone________

Send your classified entries to:

Classified Department,
Commodore Computing International Magazine,
40 Bowling Green Lane,
London EC1R
Tel: 01-278 0333

Private readers—Free (max. 32 words)
Trade advertisements—cost 40p a word
Semi-display—why not make your advertisements more substantial by choosing the semi-display rate. It is only £8 a single column centimetre.
Please ensure that **all** classified advertisements are prepaid.

The Official Book for the COMMODORE 128 Personal Computer.

If you've got one...

SAMS
The Waite Group
THE OFFICIAL BOOK FOR THE COMMODORE 128 PERSONAL COMPUTER
Mitchell Waite • Robert Lafore • Jerry Volpe
commodore 128

If you've bought the new Commodore 128 or you're thinking about it, Pitman have news for you.

A new book from SAMS, the official Commodore publishers. *It's the first and only official guide to Commodore's exciting new business computer.*

you'll need the other!

Now you can read about the 128, with its three operating modes – 64, 128 and CP/M – and learn how it can work for you at the office or at home. So whether you own a 128 or simply want to know more about it, you'll find that the official book for the Commodore 128 Personal Computer is a very wise investment.

- ★ *Use spreadsheets, word processors and databases*
- ★ *Choose peripherals*
- ★ *Create graphics and animation*
- ★ *Run CP/M programs ... and more!*

✂ -

To Peter Marshall, Pitman Publishing Ltd, 128 Long Acre, London WC2E 9AN

Please send me:
The Official Book for the Commodore 128 Personal Computer ISBN 0 672 22456 9 Price £11.50 (plus £1.15 p+p)

I enclose a cheque/postal order (payable to Pitman Publishing Ltd) for £12.65 (inc. p+p) Alternatively, please debit my ☐ ☐ ☐ ☐

Account Number ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Signed ____________________

Name (capitals please) ____________________

____

Address ____________________

____

Choosing the right computer is a good start — but can you find the right software?

FOR THE COMMODORE 64
64
SUPERSOFT
MUSIC MASTER
FOR THE COMMODORE 64
64
SUPERSOFT
BUSICALC 3
64
SUPERSOFT
INTERDICTOR PILOT
FOR THE COMMODORE 64

At SUPERSOFT we're very conscious of the fact that people who spend several hundred pounds on computer equipment are looking to do rather more than play Space Invaders.

Financial planning is a rather grand name for something you've been doing all your life – making ends meet! Perhaps if Mr Micawber had used **BUSICALC** he would have been able to balance the books a little better.

For home, club or small business use BUSICALC 1 should pay for itself in no time at all; for larger companies we recommend BUSICALC 3, one of the few really valuable programs that you can learn to use in a day.

Although your Commodore 64 is a powerful musical instrument you need to be a pretty good programmer to understand how it all works. Unless, of course, you buy **MUSIC MASTER!**

To use MUSIC MASTER requires no prior musical knowledge, though in the hands of an experienced musician it will prove an invaluable tool. You don't need to know the first thing about programming either! MUSIC MASTER is the musical equivalent of a word processor, remembering the notes you play and allowing you to replay and edit them as you wish.

INTERDICTOR PILOT is a space flight simulator. Nowadays simulators are widely used to train pilots and astronauts because – to be frank – it's a lot cheaper (and safer) than the real thing!

Imagine, if you will, life in the 22nd century: space travel is commonplace, and on the outskirts of the galaxy the first war between civilizations is being fought. A shortage of trained pilots has prompted the Federation to develop a computer simulation that allows raw recruits to gain experience without paying for their mistakes with their lives. With the aid of your Commodore 64 you too can learn to pilot the Interdictor Mk 3 craft. But be warned – this is no game!

SUPERSOFT

SUPERSOFT, Winchester House, Canning Road,
Wealdstone, Harrow, Middlesex HA3 7SJ
Telephone: 01-861 1166

Other SUPERSOFT products include the **MIKRO ASSEMBLER** cartridge, the only assembler that's ideal for beginners yet powerful enough for the professional (most of our competitors use it!). The **VICTREE** cartridge adds dozens of commands to Basic including toolkit aids and disk commands; or on disk there's **MASTER 64,** a really comprehensive package for the keen programmer.

Of course, we do also publish games programs, and with classics like **STIX, QUINX** and **KAMI-KAZE** in our range we are one of the market leaders. But we most enjoy coming up with the sort of programs that are going to be in use for months and years, not hours and days – the sort of programs that make you glad that you bought a computer – and glad that you bought SUPERSOFT!

You won't find SUPERSOFT products on the shelves of your local supermarket. But most specialist shops stock titles from our extensive range (and are prepared to obtain other programs to order). However you can also buy direct by sending a cheque (pre-paid orders are post free!), by calling at our offices, or over the telephone using your ACCESS card.